

# DSCI 336 — Data Graphics and Visualization — Spring 2022

Colorado State University  
Data Science Program, College of Natural Sciences

<b>Instructor:</b>	Mantautas Rimkus	<b>Class Location:</b>	Engineering — Room B 3
<b>Email:</b>	<a href="mailto:mantautas.rimkus@colostate.edu">mantautas.rimkus@colostate.edu</a>	<b>Class Day/Time:</b>	T/Th 11:00-11:50
<b>Office Hours:</b>	Th 15-16:30 Zoom or by appointment	<b>Phone:</b>	(970)-488-9654
<b>Credit Hours:</b>	1		

## Course Description

Data graphics and visualization techniques for data science.

## Pre-requisites

STAT 342 or STAT 341 with instructor's permission. Familiarity with the R programming language is required.

## Objective

The aim of this course is to provide a foundation in data graphics and visualization techniques in data science.

## Learning Outcomes

1. The students are able to use graphical tools to translate data into visual information.
2. The student are able to use R to produce graphics and conduct exploratory data analysis.
3. The students are able to work with different types of data, e.g., continuous data, categorical data, functional data, and high-dimensional data.

**Textbook:** Kieran Healy. *Data Visualization – A Practical Introduction*

Available at: [Data Visualization, Web Version](#)

**Attendance:** This is an in-person class, however attendance in person is recommended but not required. Each class will be recorded, and the recordings posted to Canvas. If you are unable to attend the lecture, you must watch the recording.

For those attending in person, mask wearing and physical distancing is required. A seating chart will be made, and all COVID-19 policies from CSU will be followed.

**Expectation:** Students are expected to spend about two hours outside of instructional time on reading, homework, and exam preparation per contact hour.

## Topics Covered

1. Looking at data: How human visual perception influences good charting practice
2. Making a plot: Use of ggplot and the Grammar of Graphics
3. Showing the right numbers: Exploring possibilities for displaying data
4. Transforming and annotating: Including charting into a broader workflow
5. Advanced use cases: Working with spatial data and statistical models

## **Grading**

Weekly homework assignments will make up 50% of the final grade, and the remaining 50% will come from the Final Exam. DSCI 336 uses plus / minus grading. Your final grade will be determined using this scale:

98-100 A+	92-98 A	90-92 A-
88- 90 B+	82-88 B	80-82 B-
78- 80 C+	70-78 C	60-70 D

Final scores below 60 will receive an F. Note that CSU does not use the letter grades C-, D+, or D-. Your percentage grade will be calculated to two decimal places; in the unlikely event that your percentage grade falls exactly on a cutoff (e.g. 90%, 82%), you will be assigned the higher of the two letter grades.

## **Homework**

Homework assignments will be assigned weekly on Thursday, and will be due by midnight on the next Thursday. Late homework will only be accepted if discussed with the instructor prior to the due date. All assignments are required, and missed homework will receive a grade of zero.

Every homework will be graded, and all homeworks will be equally weighted. You are allowed to work with other students on homework problems, but direct copying of others' solutions is forbidden and constitutes a violation of the Honor Code. Each student therefore must produce their own homework to be handed in and graded. You are encouraged to ask the instructor for help on any homework problem, after having attempted it on your own.

## **Exams**

There will be one final exam, the exact due date is to be determined. It will be a take-home exam, similar in form to homework assignments. Working with other students on the final exam is forbidden, and constitutes a violation of the Honor Code.

## **Students with Disabilities**

The university is committed to providing support for students with disabilities. If you have an accommodation plan, please see me so we can make any arrangements necessary to facilitate your learning.

## **Need Help?**

CSU is a community that cares for you. If you are struggling with drugs or alcohol and/or experiencing depression, anxiety, overwhelming stress or thoughts of hurting yourself or others please know there is help available. Counseling Services has trained professionals who can help. Contact 970-491-6053 or go to <http://health.colostate.edu>. If you are concerned about a friend or peer, tell someone by calling 970-491-1350 to discuss your concerns with a professional who can discreetly connect the distressed individual with the proper resources( <http://safety.colostate.edu/tell-someone.aspx>). Rams take care of Rams. Reach out and ask for help if you or someone you know is having a difficult time.

## **Important Dates**

The first day of the course is 01/18/21. The last day to Add/Drop the class is 01/25/21. The last day to withdraw from the course is 2/14/21. The last day of the course is 03/13/21.

## **Important information for students on COVID-19**

All students are required to follow public health guidelines in any university space, and are encouraged to continue these practices when off-campus(es). Students also are required to report any COVID-19 symptoms to the university immediately, as well as if

they have potentially been exposed or have tested positive at a non-CSU testing location. If you suspect you have symptoms, please fill out the COVID Reporter (<https://covid.colostate.edu/reporter/>). If you have COVID symptoms or know or believe you have been exposed, it is important for the health of yourself and others that you complete the online COVID Reporter. Do not ask your instructor to report for you; if you report to your instructor that you will not attend class due to symptoms or a potential exposure, you are required to also submit those concerns through the COVID Reporter. If you do not have access to the internet to fill out the online COVID-19 Reporter, please call (970)491-4600.

If you report symptoms or a positive test, your report is submitted to CSU's Public Health Office. You will receive immediate, initial instructions on what to do and then you will also be contacted by phone by a public health official. Based on your specific circumstances, the public health official may:

choose to recommend that you be tested and help arrange for a test conduct contact tracing initiate any necessary public health requirements or recommendations and notify you if you need to take any steps

If you report a potential exposure, the public health official will help you determine if you are at risk of contracting COVID.

For the latest information about the University's COVID resources and information, please visit the CSU COVID-19 site (<https://covidrecovery.colostate.edu>).

*The instructor reserves the right to update this syllabus at any time. To remain current with class policies, it is the student's responsibility to attend lectures or view recordings.*