

Course Information for
STAT:4580 Data Visualization and Data Technologies
Semester: Spring 2025
Lectures: MWF 9:30PM – 10:20PM
Room: 140 SH

Instructor: Luke Tierney, Schaeffer 209, *luke-tierney@uiowa.edu*.
Office Hours: Zoom; MWF 10:30 – 11:20 or by appointment.
Web Page: <https://stat.uiowa.edu/~luke/classes/STAT4580-2025>
TA Yikai Zhang, *yikai-zhang@uiowa.edu*
TA Office Hours: Zoom; MTWTH 11:30 – 12:20.
DEO: Kung-Sik Chan, 241 SH, 335-0712

Outline

This course introduces common techniques for visualizing univariate and multivariate data, data summaries, and modeling results. Students will learn how to create and interpret these visualizations, and to assess effectiveness of different visualizations based on an understanding of human perception. Data technologies for obtaining and preparing data for visualization and further analysis will also be discussed. Students will also learn how to present their results in written reports and to use version control to manage their work.

Prerequisites

An introductory statistics course and a regression course. Prior exposure to basic use of statistical programming software, such as R or SAS, as obtained from a regression course, is strongly recommended.

Text Books

The following are recommended text books:

- Kieran Healy (2018) *Data Visualization: A practical introduction*, Princeton
- Paul Murrell (2009). *Introduction to Data Technologies*, Chapman & Hall/CRC.
- Hadley Wickham, Mine Çetinkaya-Rundel, and Garrett Grolemund (2023) *R for Data Science, 2nd Edition*, O'Reilly.
- Claus O. Wilke (2019) *Fundamentals of Data Visualization*, O'Reilly, Inc.

Reading and Homework

Homework assignments will be given roughly every week. Assignments will be posted on the class web site. Suggested reading will also be posted on the class web site when appropriate.

Assignments will be written as reports using `Rmarkdown` and submitted electronically. Findings and graphs should always be explained in words, using proper grammar and spelling.

Class Project

Students registered for this class are expected to complete a class project. You can work on this project on your own or in a group of up to three students. Your project should represent about 10 hours of work for each student on developing a visual analysis of a data set of your choosing. A one page proposal for your project is due on Monday, March 24. A final report on your project is due on Friday, May 9. Your project may be shared with the class through the class web page.

Grading

The course grade will be based on quizzes (10%), assignments (70%) and the class project (20%). You may discuss general issues and approaches with your fellow students, but your work must be your own. If you use any references, including solutions to similar problems prepared by other students, you *must* cite and credit your sources.

Code of Academic Honesty

Homework submissions and project submissions are governed by the Code of Academic Honesty. Work you submit must be your own work, not the work of others. If you use ideas or results found elsewhere you must cite them properly. This includes use of an AI-content generator (such as ChatGPT) for any of your work.

Academic Honesty and Misconduct

All students in CLAS courses are expected to abide by the [CLAS Code of Academic Honesty](#). Undergraduate academic misconduct must be reported by instructors to CLAS according to [these procedures](#). Graduate academic misconduct must be reported to the Graduate College according to Section F of the [Graduate College Manual](#).

Student Complaints

Students with a complaint about a grade or a related matter should first discuss the situation with the instructor and/or the course supervisor (if applicable), and finally with the Director or Chair of the school, department, or program offering the course.

Undergraduate students should contact [CLAS Undergraduate Programs](#) for support when the matter is not resolved at the previous level. Graduate students should contact the CLAS [Associate Dean for Graduate Education and Outreach and Engagement](#) when additional support is needed.

Drop Deadline for this Course

You may drop an individual course before the deadline; after this deadline you will need collegiate approval. You can look up the [drop deadline for this course](#) here. When you drop a course, a “W” will appear on your transcript. The mark of “W” is a neutral mark that does not affect your GPA. Directions for adding or dropping a course and other registration changes can be found on the [Registrar's website](#). Undergraduate students can find policies on dropping CLAS courses [here](#). Graduate students should adhere to the [academic deadlines](#) and policies set by the Graduate College.

Date and Time of the Final Exam

The [final examination date and time](#) will be announced by the Registrar generally by the fifth week of classes and it will be announced on the course ICON site once it is known. **Do not plan your end of the semester travel plans until the final exam schedule is made public. It is your responsibility to know the date, time, and place of the final exam.** According to Registrar's final exam policy, students **have a maximum of two weeks after the announced final exam schedule** to request a change if an exam conflict exists or if a student has more than two exams in one day (see the [policy](#) here).

Attendance and Absences

Students with UI-authorized activities must discuss their absences with the instructor as soon as possible. Religious obligations must be communicated within the first three weeks of classes.

Communication: UI Email

Students are responsible for all official correspondences sent to their UI email address (uiowa.edu) and must use this address for any communication with instructors or staff in the UI community. For the privacy and the protection of student records, UI faculty and staff can only correspond with UI email addresses.

Mental Health Resources and Student Support

Students are encouraged to be mindful of their mental health and seek help as a preventive measure or if feeling overwhelmed and/or struggling to meet course expectations. Students are encouraged to talk to their instructor for assistance with specific class-related concerns. For additional support and counseling, students are encouraged to contact University Counseling Service (UCS). Information about UCS, including resources and how to schedule an appointment, can be found at counseling.uiowa.edu. Find out more about UI mental health services at mentalhealth.uiowa.edu.

[Student Care and Assistance](#) provides assistance to University of Iowa students who are experiencing a variety of crisis and emergency situations, including but not limited to medical issues, family emergencies, unexpected challenges, and sourcing basic needs such as food and shelter. More information on the resources related to basic needs can be found at basicneeds.uiowa.edu/resources/. Students are encouraged to contact Student Care & Assistance in the Office of the Dean of Students (Room 135 IMU, dos-assistance@uiowa.edu, or 319-335-1162) for support and assistance with resources.

University Policies

Accommodations for Students with Disabilities

The University is committed to providing an educational experience that is accessible to all. If a student has a diagnosed disability or other disabling condition that may impact the student's ability to complete the course requirements as stated in the syllabus, the student may seek accommodations through [Student Disability Services](#) (SDS). SDS is responsible for making Letters of Accommodation (LOA) available. **The student must provide an LOA to the instructor as early in the semester as possible, but requests not made at least two weeks prior to the scheduled activity for which an accommodation is sought may not be accommodated.** The LOA will specify what reasonable course accommodations the student is eligible for and those the instructor should provide. Additional information can be found on the [SDS website](#).

Free Speech and Expression

Absences for Religious Holy Days

Classroom Expectations

Non-discrimination

Sexual Harassment/Misconduct and Supportive Measures

Sharing of Class Recordings (if appropriate)