

Course Information for
STAT:4580 Data Visualization and Data Technologies
Semester: Spring 2026
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/STAT4580-2026>
TA Ying Xiang, ying-xiang@uiowa.edu
TA Office Hours: Zoom; MTWTH 11:00 – 12:00.
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 23. A final report on your project is due on Friday, May 8. 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.

Artificial Intelligence (AI) Policy

You may make use of generative AI tools, such as GitHub Copilot or ChatGPT in your work; however, any use of such tools must be clearly acknowledged and properly cited, in accordance with academic integrity guidelines.

Accommodations for Students with Disabilities

The University of Iowa is committed to providing an educational experience that is accessible to all students. A student may request academic accommodations for a disability (which include but are not limited to mental health, attention, learning, vision, and physical or health-related conditions). A student seeking academic accommodations should first register with Student Disability Services and then meet with the course instructor privately in the instructor's office to make particular arrangements. Reasonable accommodations are established through an interactive process between the student, instructor, and SDS. See <http://sds.studentlife.uiowa.edu/> for more information.

Absences from Class

University regulations require that students be allowed to make up examinations which have been missed due to illness, religious holy days, military service obligations, including service-related medical appointments, jury duty, or other unavoidable circumstances or other university-sponsored activities. Students should work with their instructors regarding making up other missed work, such as assignments, quizzes, and classroom attendance.

Absences for Religious Holy Days

The university is prepared to make reasonable accommodations for students whose religious holy days coincide with their classroom assignments, test schedules, and classroom attendance expectations. Students must notify their instructors in writing of any such religious holy day conflicts or absences within the first few days of the semester or session, and no later than the third week of the semester. If the conflict or absence will occur within the first three weeks of the semester, the student should notify the instructor as soon as possible. See Policy Manual 8.2 Absences for Religious Holy Days for additional information.

Absences for Military Service Obligations

Students absent from class or class-related requirements due to U.S. veteran or U.S. military service obligations (including military service-related medical appointments, military orders, and National Guard Service obligations) shall be excused without any grading adjustment or other penalty. Instructors shall make reasonable accommodations to allow students to make up, without penalty, tests and assignments they missed because of veteran or military service obligations. Reasonable accommodations may include making up missed work following the service obligation; completing work in advance; completing an equivalent assignment; or waiver of the assignment without penalty. In all instances, students bear the responsibility to communicate with their instructors about such veteran or military service obligations, to meet course expectations and requirements.

Free Speech and Expression

The University of Iowa supports and upholds the First Amendment protection of freedom of speech and the principles of academic and artistic freedom. We are committed to open inquiry, vigorous debate, and creative expression inside and outside of the classroom. Visit the Free Speech at Iowa website for more information on the university's policies on free speech and academic freedom.

Non-discrimination Statement

The University of Iowa prohibits discrimination in employment, educational programs, and activities on the basis of race, creed, color, religion, national origin, age,

sex, pregnancy (including childbirth and related conditions), disability, genetic information, status as a U.S. veteran, service in the U.S. military, sexual orientation, gender identity, or associational preferences. The university also affirms its commitment to providing equal opportunities and equal access to university facilities. For additional information on nondiscrimination policies, contact the Senior Director, Office of Civil Rights Compliance, the University of Iowa, 202 Jessup Hall, Iowa City, IA 52242-1316, 319-335-0705, ui-ocrc@uiowa.edu. Although not required, students have the option to share their pronouns and chosen/preferred names in class and through MyUI. Instructors and advisors can find information about a student's chosen/preferred name in MyUI.

Classroom Expectations

Students are expected to comply with University policies regarding appropriate classroom behavior as outlined in the Code of Student Life. While students have the right to express themselves and participate freely in class, it is expected that students will behave with the same level of courtesy and respect in the virtual class setting (whether asynchronous or synchronous) as they would in an in-person classroom. Failure to follow behavior expectations as outlined in the Code of Student Life may be addressed by the instructor and may also result in discipline under the Code of Student Life policies governing E.5 Disruptive Behavior or E.6 Failure to Comply with University Directive.

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 DEO (Chair) of the department, school or program offering the course. Sometimes students will be referred to the department or program's Director of Undergraduate Studies (DUS) or Director of Graduate Studies (DGS).

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 Graduate Affairs Manager when additional support is needed.

Course's College (Administrative Home)

For undergraduate courses

The College of Liberal Arts and Sciences (CLAS) is the home of this course, and CLAS governs the add and drop deadlines, academic misconduct policies, and other undergraduate policies and procedures. Other UI colleges may have different policies.

For graduate courses

The College of Liberal Arts and Sciences (CLAS) is the home of this course, and CLAS governs the policies and procedures for its courses. Graduate students, however, must

adhere to the academic deadlines set by the Graduate College.

Drop Deadline for this Course

You may drop an individual course before the drop 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. To discuss how dropping (or staying in) a course might affect your academic goals, please contact your Academic Advisor. 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.

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.

Other Policies

For the UI policy regarding severe weather, see <https://opsmanual.uiowa.edu/community-policies/extreme-weather-protocol>.

For policies on sexual harassment and other items, see <https://provost.uiowa.edu/student-course-policies>.