

Course Information for  
STAT:4580 Data Visualization and Data Technologies  
Semester: Spring 2020  
Lectures: MWF 9:30PM – 10:20PM  
Room: Schaeffer 14

Instructor: Luke Tierney, Schaeffer 209, *luke-tierney@uiowa.edu*.  
Office Hours: MWF 10:30 – 11:20 or by appointment.  
Web Page: <http://www.stat.uiowa.edu/~luke/classes/STAT4580-2020>  
TA Brady Anderson, Schaeffer 223 SH, *brady-anderson@uiowa.edu*  
TA Office Hours: Tuesday 1:30 – 3:00; Thursday 1:30 – 3:00.  
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:

- Antony Unwin (2015), *Graphical Data Analysis with R* Chapman & Hall/CRC.
- Hadley Wickham and Garrett Grolemund (2016), *R for Data Science*, O'Reilly.
- Paul Murrell (2009). *Introduction to Data Technologies*, Chapman & Hall/CRC.

### 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 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 assignments (80%) 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.

### **EMail and World Wide Web**

Announcements on changes or clarifications of assignments or other matters may be sent by email to your university email account or posted on the class web page. You should check the class home page and your email regularly.

### **College of Liberal Arts and Sciences: Policies and Procedures**

#### Administrative Home of the Course

The College of Liberal Arts and Sciences is the administrative home of this course and governs matters such as the add/drop deadlines, the second-grade-only option, and other related issues. Different colleges may have different policies. Questions may be addressed to 120 Schaeffer Hall, or see the CLAS Academic Policies Handbook at <https://clas.uiowa.edu/students/handbook>.

#### Electronic Communication

University policy specifies that students are responsible for all official correspondences sent to their University of Iowa e-mail address (@uiowa.edu). Faculty and students should use this account for correspondences (Operations Manual, III.15.2, k.11).

#### Accommodations for 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 includes but is 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 <https://sds.studentlife.uiowa.edu/> for information.

### Academic Honesty

All CLAS students or students taking classes offered by CLAS have, in essence, agreed to the College's Code of Academic Honesty: "I pledge to do my own academic work and to excel to the best of my abilities, upholding the IOWA Challenge. I promise not to lie about my academic work, to cheat, or to steal the words or ideas of others; nor will I help fellow students to violate the Code of Academic Honesty." Any student committing academic misconduct is reported to the College and placed on disciplinary probation or may be suspended or expelled (CLAS Academic Policies Handbook).

### CLAS Final Examination Policies

The final examination schedule for each class is announced by the Registrar generally by the fifth week of classes. Final exams are offered only during the official final examination period. **No exams of any kind are allowed during the last week of classes.** All students should plan on being at the UI through the final examination period. Once the Registrar has announced the date, time, and location of each final exam, the complete schedule will be published on the Registrar's web site and will be shared with instructors and students. It is the student's responsibility to know the date, time, and place of a final exam.

### Making a Suggestion or a Complaint

Students with a suggestion or complaint should first visit with the instructor (and the course supervisor), and then with the departmental DEO. Complaints must be made within six months of the incident (CLAS Academic Policies Handbook).

### Understanding Sexual Harassment

Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community have a responsibility to uphold this mission and to contribute to a safe environment that enhances learning. Incidents of sexual harassment should be reported immediately. See the UI Office of the Sexual Misconduct Response Coordinator for assistance, definitions, and the full University policy.

### Reacting Safely to Severe Weather

In severe weather, class members should seek appropriate shelter immediately, leaving the classroom if necessary. The class will continue if possible when the event is

over. For more information on Hawk Alert and the siren warning system, visit the Department of Public Safety website.