

Math 152 - Statistical Analysis of Data

Spring 2025, MWF 1:00-1:50 Christian A. Johnson (CJ) 305

Instructor

Erin Tripp
etripp@hamilton.edu

Office Hours

CJ 107
MWF 11-12, 2-3
[*Or by appointment*](#)

Course description

An introduction to the principles and methods of applied statistics.
There are four main units composed of the following topics:

1. Descriptive Statistics
 - summary statistics
 - visualizing data
2. Probability
 - laws of probability
 - sampling distributions and the CLT
3. Inferential Statistics
 - confidence intervals
 - common significance tests
4. Regression
 - linear and multiple regression
 - inference for regression

We will place a heavy emphasis on intuition and interpretation. Virtually all modern statistical analysis is done on computers, so we will learn to use the free statistical programming language R. Absolutely no experience with programming or computer software of any kind is assumed.

Textbook

OpenIntro Statistics 4th Edition (<https://www.openintro.org/book/os/>)

This is a **free textbook** (just set the price to zero dollars) which has good coverage and lots of examples! We will cover most of the book, but will skip some sections I consider less important. Homeworks will mostly be from the book. The book comes with free videos and labs that you are welcome to use for extra practice.

Software

RStudio (<https://posit.co/downloads/>)

We will be using the open source R IDE RStudio for labs and other assignments.

Evaluation

Assignment, % of total grade, Description

Cooperative Labs Due Fridays 10 pm	10%	You and 1-2 randomly chosen classmates will work through a guided exploration of a data set. Labs will be submitted as PDFs on Gradescope.
Homework Due Wednesdays 10 pm	10%	Practice problems. Work with whomever you wish, but everyone must submit their own solution. The lowest two scores will be dropped. Homework will be submitted as images or PDFs on Gradescope.
Midterm Exams	10% 15% 20%	Take-home, open note exams with a two-hour time limit, to be taken during a 48-hour period.
Data Exploration Project	15%	Individuals or small groups will research a dataset of interest, provide a short written summary along with basic statistical analysis and visualization, and give a short oral presentation on their chosen data.
Final Exam	20%	Take-home, open note exam with a three-hour time limit, to be taken during the exam block if possible

Blackboard

The Blackboard site will be an invaluable resource to find information and material for the course including: the syllabus and course calendar, assignments, exam practice problems, Gradescope and Lumen information, updated course grades, and links to other campus and online resources.

Quantitative and Symbolic Reasoning (QSR) Intensive Course

This course meets the College's expectations for the QSR-Intensive designation. Therefore, this class will:

- Include material in at least one of the following three categories:
 - Statistical Analysis. The use of statistical analysis to describe data and make inferences.
 - Mathematical Representation. The use of mathematical models such as those based on graphs, equations, and geometric objects to represent patterns, relationships, and forms.
 - Logic and Symbolic Reasoning. The use of formal logic or symbolic reasoning such as in the following examples: the proper construction of a computer program or a formal proof; the analysis of language in linguistics; or the study of music theory.
- Include four or more graded assignments (tests, quizzes, problem sets, labs, oral presentations, exhibits) in at least one of the three categories described above. QSR projects will be substantial and will be distributed across the semester.
- Provide explicit instruction in problem solving or data analysis techniques and strategies specific to the level and content of the course.

The QSR Center (CJ 301 & 303) provides peer-tutoring support for the QSR aspects of this course. Drop-in tutoring is available for this class at the following times:
 MON: 2:00-4:00 TUES: 4:00-6:00, 8:00-9:00 WED: 2:00-4:00 THURS: 8:00-9:00

AI use

No AI tools may be used for coursework unless explicitly stated in the assignment. This includes ChatGPT, Google Gemini, CoPilot, etc.

Honor code

Our College has a strict Honor Code. Students may (should!) work together on homework, but must write their own submissions. Exams should be completed alone. All resources used, including other students, should be cited appropriately.

Late Work

Your lowest two homework grades will be dropped. This policy is meant to automatically cover most situations in which students ask for extensions, without you having to email me. If you have a serious, long-term situation which will affect your ability to complete three or more assignments, please reach out, but otherwise, late work will not be accepted for any reason.

Accommodations

The College will make reasonable accommodations for students with documented disabilities. Eligible students who would like to make a formal request for this course must contact me during the first two weeks of class.