

MATH/STAT 209: Introduction to Statistical Modelling, Spring 2018

Tuesday, Thursday 10:30-11:45 JPSN G23

Tuesday, Thursday 12:00-13:15 JPSN G28

Tuesday, Thursday 15:00-16:15 JPSN G23

Instructor: Taylor Arnold

E-mail: tarnold2@richmond.edu

Office: Jepson Hall, Rm 218

Office hours: Tuesday, Thursday 16:15-17:00

Description:

This course broadly covers the entire process of collecting, cleaning, visualizing, modeling, and presenting datasets. It has a MATH designation but is not a *mathematics* course. The focus is on applied statistics and data analysis rather than a detailed study of symbolic mathematics. By the end of the semester you will feel confident collecting, analyzing, and writing about datasets from a variety of fields. You will be able to use these skills to address data-driven problems in a wide range of application domains.

Computing:

To facilitate your ability to actually *do* statistics, most class meetings will involve some form of computing. No prior programming experience is assumed or required.

We will use the **R** programming environment throughout the semester. It is freely available for all major operating systems and is pre-installed on many campus computers. You can download it and all supporting files for your own machine via these links:

<https://cran.r-project.org/>

<https://www.rstudio.com/>

The lab computers in Jepson are available and contain all of the required software. I strongly recommend, however, downloading these on your own machine so that you will be able to work on assignments without needing to work only in the computer lab.

Course Website:

All of the materials and assignments for the course will be posted on the class website:

<https://statsmaths.github.io/stat209>

The website contains notes, assignment details, and supplemental materials. At the end of the semester, this version of the course will be archived and available for your reference.

GitHub:

Your work for this semester will be submitted through GitHub, the same platform that hosts our website, using the GitHub classroom program. You will need to set up a free account, which we will cover during the first several week of class.

In-Class Assessments (quizzes):

On most Tuesdays, there will be a short assessment covering the material from the prior week. Note that this includes both a conceptual understanding of the topics covered as well as the ability to apply these concepts to data with code. I will provide details on the class website with the exact topics on each assessment.

Data Projects:

While the assessments serve to make sure you are following along with the general concepts, the core aim of the course is to teach you how to *apply* statistics to real-world questions. To this end, we will complete several data-oriented projects. These projects consist of short written documents that mix code, graphics, and prose to provide a comprehensive analysis of a data set.

Final Grades:

The in-class assessments, of which there will 12, are graded on a strictly pass/fail basis. The whole of these are converted into a letter grade according to how many you have passed:

- **A** Passing 11/12 assessments
- **A-/B+** Passing 10/12 assessments
- **B** Passing 9/12 assessments
- **B-/C+** Passing 8/12 assessments
- **C** Passing 7/12 assessments
- **D** Passing 6/12 assessments

Your projects will receive a letter grade according to a rubric that I will distribute ahead of the due-date. The final grade will be determined by weighting the assessments and projects as follows:

- **Projects:** 67%
- **Assessments:** 33%

To pass the course, you must also miss no more than four class meetings. Attendance requires that you arrive on-time, complete any out of class assignments for the day, and fully engage with the course material. Failing to fulfill these attendance requirements may result in a failing grade for the course.

Class Policies:

The following class policies address some of the most common questions and concerns that students have. If anything is unclear, please feel free to contact me for clarification at any point in the semester.

- **Academic honesty:** Cheating and plagiarism are grave scholarly offenses and potential grounds for expulsion; they are also a major barrier to your intellectual development. You are expected to familiarize yourself with the entirety of the University of Richmond's Honor Code. If you are confused or unsure about appropriate citation protocol or any other aspect of the Honor code, please consult me before turning in an assignment.

- **Special approval:** If you have special approval forms for extra time on exams or any other circumstances I should know about, please speak with me as early as possible so that we can best accommodate your needs.
- **Late work:** You are expected to submit all work on-time. Late reports will not be considered; always hand in something even if it is not perfect.
- **Attendance:** You are expected to both attend and participate in most class meetings. If you must be absent due to illness or other pressing need, please let me know by email as soon as possible. A habit of arriving late, failing to participate, or failing to accomplish any out of class assignments is considered equivalent to an absence.
- **Make-up work:** In instances where students have a valid excuse for missing a quiz, please arrange to meet with me as soon as possible.
- **Class conduct:** During class I expect you to refrain from checking email, being on phones, or working on assignments for other classes.
- **Computers:** During programming assignments started in class, I expect you to use the computers in the lab. This is helpful for several reasons: it reduces distractions from iMessages and other materials on your laptop; all of the lab computers are configured using the same software and language set-up, reducing errors specific to your machine; and, other students and myself can share the same screen without worrying about modifying something on your personal machine.
- **Office hours:** If you would like to meet during my office hours, please just come by. No need to schedule an appointment. If you find me in my office at other times of the week, I am usually glad to meet then as well. Finally, I am also happy to make appointments outside of my normal office hours. These appointments are meant for discussing longer issues that are not appropriate for regular office hours (i.e., asking for recommendation letters or discussing an extended absence) or for students who cannot make my normal office hours. Please note that appointments should be booked at least 24 hours ahead of time.
- **Email:** I will also answer questions by email (it can, in fact, be much faster than scheduling an appointment for small issues). During the week, I aim to respond within 24 hours, with emails sent over the weekend responded to by Monday morning. If your question involves code, please attach your current lab or report as that will expedite my answering your question(s).

Notice:

I reserve the right to modify this syllabus, with advanced warning, throughout the semester. If necessary, I will email the class list and post an updated version of the document on the course website.