

STAT 209, SUMMER 2021: SPECIFIC LEARNING OBJECTIVES

A. Basic Data Science Workflow

1. Demonstrate basic fluency with programming fundamentals
2. Create self-contained, reproducible reports
3. Use a version control system for collaboration and documentation
4. Produce clean, readable code

B. Understanding Visualization

1. Identify variables, visual cues, and mappings between them
2. Identify key patterns revealed by a visualization
3. Identify strengths and weaknesses of particular visualizations

C. Creating Visualizations

1. Choose appropriate and effective graphical representations
2. Employ informative annotation and visual cues to guide the reader
3. Write clean, readable visualization code

D. Translating Between the Qualitative and the Quantitative

1. Choose suitable datasets to address questions of interest
2. Describe what data suggests in language suitable for a general audience
3. Extract “takehome messages” across multiple visualizations

E. Data Wrangling

1. Master "slicing and dicing" data to access needed elements
2. Create new variables from old ones to serve a purpose
3. Aggregate and summarize data within subgroups
4. Join data from multiple sources to examine relationships

F. Intermediate Data Science Tools

1. Modularize repetitive tasks
2. Perform basic interactions with a database
3. Employ at least one specialized statistical or visualization technique