

Syllabus: Introduction to R and Visualization

This course teaches students a new skill set in under 3 hours of instructional video. It's designed for individuals without a math or programming background and walks them step-by-step through basic data analysis techniques and visualization skills.

By the end of this course, students will be able to:

1. Think about data and manipulate it
2. Code and format data in R
3. Create dynamic and appealing visualizations with R

Assessment:

1. **Concept reviews:** these are comprised of short five question quizzes that cover the most important concepts and ideas in each lesson. They encourage holistic understanding and are multi-faceted question types (i.e. drag and drop, fill-in-the-blanks, matching, etc).
2. **Exercises:** these are additional videos that cover the coding functions in the instructional video in more depth. They are project-based and include coding templates for students to strengthen their skills outside of the course.

Materials provided:

1. Accompanying PDFs to use as reference materials
2. R code templates from the instructional videos and exercises
3. Data sets used in the instructional videos and exercises

Course Outline

1. Getting started with R: *6 min*
 - a) Installing R and RStudio
 - b) Introduction to RStudio

2. Overview of data science and R: *31 min*
 - a) What is data science?
 - b) A data scientist's approach
 - c) Introduction to R
 - d) Getting started in R

3. Working with data in R: *37 min*
 - a) Understanding data types
 - b) Manipulating data
 - c) Subsetting data
 - d) Summarizing data

4. Basic visualizations: *38 min*
 - a) Basic plotting in R
 - b) Basic plotting in ggplot2
 - c) Building a graph
 - d) Customizing graphs
 - e) Creating a heatmap

5. Advanced visualizations: *27 min*
 - a) Advanced plotting in ggplot2
 - b) Advanced plotting, part 2
 - c) 3D plotting

6. Visualizing data with the Google API: *21 min*
 - a) Mapping DC crime
 - b) Creating reusable functions
 - c) Tips and additional resources

Total instructional time:

2 hrs, 40 min