

**KEYBOARD SHORTCUTS FOR SLIDES:**

- Use `←` and `→` to navigate through the slides.
- Use `f` to toggle full screen.
- Use `o` to view an overview of all slides.
- Use `h` to see a list of other shortcuts.

**SLIDES**

`<a href=https://ps52007d.littlemonkeylab.com/content/lectures//lecture01.slides.html class="btn-slides" target="_blank"> View slides`

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**CLASS PRACTICE**

`<a href=lecture01/lecture01.html class="btn-notes"> Notes zip file`

**Syllabus title****Course Information**

| Instructor   | Course  |
|--|---|
| John Paul Helveston<br>Science & Engineering Hall, 2830<br>+1 (202) 994-7173<br><a href="#">?var:email</a><br><a href="#">@JohnHelveston</a> | <a href="#">?var:weekday</a><br><a href="#">?var:room</a><br><a href="#">?var:dates</a><br><a href="#">?var:time</a><br><a href="#">Slack</a> |

**Remote attendance / class recording**

You should plan to attend class in person. I will only open a zoom for virtual attendance on an individual case-by-case basis for specific excusable absences (e.g. illness, family matters, etc.). Lectures will **not** be recorded. In-person attendance is critical as we will spend a lot of time working on problems and writing code during class. If you have any questions or need special accommodations, send me a message on slack and we can discuss.

**Course Description****GW Bulletin Description (short)**

Introduction to exploratory data analysis using the [R programming language](#); data visualization, data cleaning, exploratory analysis, information communication, rmarkdown, reproducibility.

## Unofficial Description

## Prerequisites

## Learning Objectives

## Pep Talk!

Working in and learning a programming language can be as challenging as learning a new spoken language. Hadley Wickham (chief data scientist at RStudio and author of many amazing R packages you'll be using) [made this wise observation](#):

It's easy when you start out programming to get really frustrated and think, "Oh it's me, I'm really stupid," or, "I'm not made out to program." But, that is absolutely not the case. Everyone gets frustrated. I still get frustrated occasionally when writing R code. It's just a natural part of programming. So, it happens to everyone and gets less and less over time. Don't blame yourself. Just take a break, do something fun, and then come back and try again later.

If you're finding yourself taking way too long hitting your head against a wall and not understanding, **take a break**, talk to classmates, ask questions in Slack, and try it again later.

**I promise, you can do this**

## Quizzes

There will be 5 quizzes given about once every other week immediately at the beginning of class. You will not be told in advance when there is a quiz, and make up quizzes will not be available if you miss it (except for excused absences). Please show up on time to class each week to ensure that you do not miss a quiz.

Quizzes will cover material presented in previous classes and assignments during the weeks since the most-recent quiz. Quizzes are **short** (5-10 minutes) and are designed to test for fluency and to demonstrate where additional study is needed. **Quizzes are low-stakes** - your worst one is dropped, and the rest

count for a small portion of your final grade. If you do poorly on one or two, use that as feedback on where you need additional improvement.

**Why quiz at all?** Research shows that giving small quizzes throughout a class can dramatically help with *retention*. It's a phenomenon known as the "retrieval effect" - basically, you have to *practice* remembering things, otherwise your brain won't remember them. The phenomenon and research on it is explained in detail in the book "[Make It Stick: The Science of Successful Learning](#)," by Brown, Roediger, and McDaniel.

## Homework

Students will be responsible for two types of assignments throughout the semester:

- **Weekly Assignments:** Each week, students will be assigned specific readings and exercises to prepare for the next class period. Students will need to submit responses that include a thoughtful reflection on these concepts each week.
- **Mini Projects:** There will be three mini projects throughout the semester designed to provide hands-on experience with the material covered in class by working with and exploring real data sets and / or creating visualizations. While students may work with their peers on these assignments, each student must submit their own work. Credit for each assignment will be allocated according to a rubric provided in the assignment description.

## Final Project

Throughout the semester, students will work in teams of 2-3 students towards a final project of an exploratory data analysis. At the end of the semester, each student will submit a report of their analysis in the form of an html web page and create a 5 to 10-minute video presentation of their results. To make the overall project more manageable, it will be broken down into several separate "milestone" deliverables due throughout the semester, including a proposal, progress report, presentation video, and final report.

View the [final project overview](#) page for more details.

## Final Interview

Rather than have a final exam, each student will have a 10-minute interview by the instructor. The interview will be focused on the final project the student worked and will contain questions related to concepts covered during the course. Students will be provided a list of questions and the grading rubric ahead of the interview.

## Grading

### Category Breakdown

Final grades will be calculated as follows:

| Item                           | Weight | Notes                     |
|--------------------------------|--------|---------------------------|
| Weekly HW                      | 12 %   |                           |
| Quizzes                        | 8 %    | 5 quizzes, lowest dropped |
| Mini Project 1                 | 8 %    | Individual assignments    |
| Mini Project 2                 | 8 %    |                           |
| Mini Project 3                 | 8 %    |                           |
| Final Project: Proposal        | 9 %    | Teams of 2-3 students     |
| Final Project: Progress Report | 12 %   |                           |
| Final Project: Report          | 16 %   |                           |
| Final Project: Presentation    | 9 %    |                           |
| Final Interview                | 10 %   | Individual interview      |

Here's a visual breakdown by category:

Loading required package: viridisLite

Loading required package: ggplot2

Attaching package: 'dplyr'

The following objects are masked from 'package:stats':

filter, lag

The following objects are masked from 'package:base':

intersect, setdiff, setequal, union

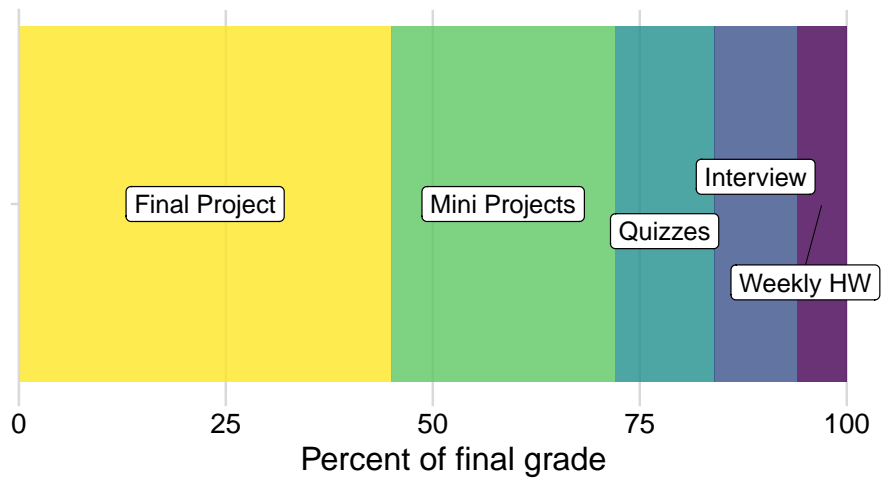
### Course Learning Objectives

By the end of the term, you will...

- learn studd
- learn more stuff

### Textbooks

All books are freely available online. Hardcopies are also available for purchase.



**Course community**

**Inclusive community**