

# Homework 1

*Your Name Here*

*Due Date Here*

## Instructions

Reproduce this document in Rmarkdown (including these instructions)

## STAT 412/612 Statistical Programming in R, Spring 2019

**Time:** 5:30 - 8:00 pm ~~Mondays~~ Wednesdays Don Myers Technology and Innovation (DMTI), Room 114.

**Instructor:** Dr. David Gerard [dgerard@american.edu](mailto:dgerard@american.edu)

Office: DMTI 106E

Phone: 202-885-3022

Office Hours: TBD

## Materials

- Required: *Laptop computer*
  - Current version of R
  - Current version of RStudio
- Books: [R for Data Science](#) by Wickham and Grolemund (O'Reilly).

If I have to miss class on the rare occasion, I am responsible for any assignments or papers given out during any missed class. I will obtain these materials from a colleague BEFORE the next class meeting.

I expect to have to do some research (use Google, stackoverflow, etc) to do my assignments.

## GRADED WORK

**Assignments:** There will be approximately 10 formal assignments throughout the semester.

I may receive assistance from other students in the class and the professor, but my submissions must be composed of my own thoughts, coding and words. If I get ideas from online resources such as stackoverflow or github when I get stuck, I will cite my source be specific about what I have added to it. I will be able to redo the code “cold” when I do this. Failure to do so is a violation of AU’s Academic Integrity Code.

Late assignments will not be accepted.

**Exams:** We will have approximately three in-class exams. Any material covered in class, reading assigned, or on assignments is “fair game.” No make-up exams will be given unless I have an extremely compelling excuse such as observance of a religious holiday or a documented medical emergency.

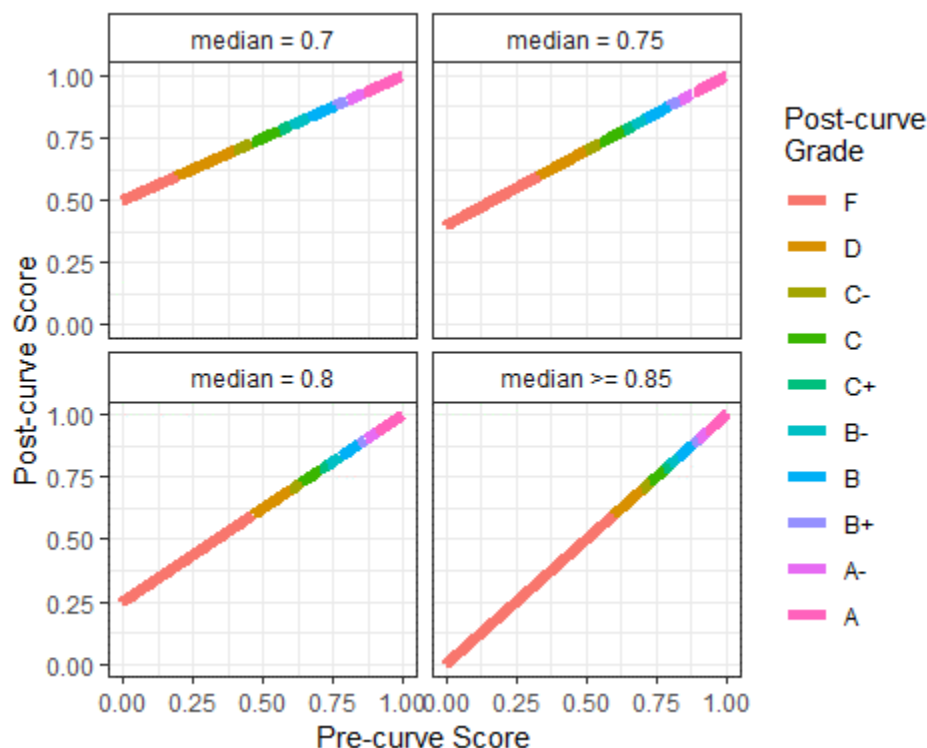
Project:

My project should involve working with a fairly large real-world dataset to answer some question of interest. It should be reproducible and include graphical representations of my data.

*Grading* I should be able to explain my work on assignments, exams, and project and my rationale. Based on my explanation (or lack thereof), the professor may modify my grade. My final grade will be determined by:

Graduate students:	Undergraduate Students:
Assignments (40%)	Assignments (50%)
Exams (40% composed of: Exam 1 = 12%, Exam 2 = 12%, Final Exam = 16%)	Exams (40% composed of: Exam 1 = 12%, Exam 2 = 12%, Final Exam = 16%)
Final Project (20%)	Attendance and participation (10%)

A visual representation of the curve can be found below



## Other

We will occasionally need to type equations like  $A = \pi r^2$ . More often we will evaluate something like the number of cars in the mtcars built-in dataset is 50.

## Some Basic R Exercises

Complete the following exercises on basic R.

Useful functions `seq()`, `sum()`, `[]`, `c()`, `length()`, `log()`

1. Create a vector that contains all integers divisible by 3 from 33 to 639. Assign this vector to a variable. Add up the elements of this vector.
2. Create a vector of numerics of length 100 that starts at 33 and ends of 639. Assign this vector to a variable. The difference between any two consecutive elements should be the same. Add up the elements of this vector.
3. Extract the 9th element from the vector you created in part 1.
4. Extract the 9th to 150th elements from the vector you created in part 1.
5. Combine the vectors from parts 1 and 2 and assign this combined vector to a new variable.
6. Use a function to determine the length of the vector in part 5.
7. What is the sum of the log of every element in the vector in part 5?