MATH 7608 STATISTICAL PROGRAMMING WITH R

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Fall, 2019
Time: TR 11:20am-12:45pm
Room: DH 231

(A) Course Contents:

1. Overview on traditional R programming: Basic Data Structure, Expression, Basic Programming, Input and Output, Programming with functions, Advanced Data Structure. https://www.stat.berkeley.edu/~spector/Rcourse.pdf.
2. Review on data visualization with modern graphic system ggplot2.
3. Tools for modern R programming: data transformation with dplyr, tibbles vs. data.frame, data import with readr, tidy data with tidyr, relational data with dplyr.
4. More tools for modern R programming: strings with stringr, pipes with magrittr, more about functions and vectors and iteration with purrr, R Markdown.

(B) Office Hours: 9:30am-11:00am MW (DH 219) or by appointment lihdeng@memphis.edu

(C) Textbook and recommended references:

- "R for Data Science", by Hadley Wickham and Garrett Grolemund. Publisher: O'Reilly. ISBN-13: 978-1491910399. ISBN-10: 1491910399. URL link: http://r4ds.had.co.nz/
- PC/Mac with access to internet will be required. Students will install R, which is a free programming language can be downloaded at https://cran.r-project.org/
- Recommended reference: The R Book, Second Edition, by Michael J. Crawley. Publisher: Wiley, ISBN-13: 978-0470973929, ISBN-10: 0470973927
- Recommended reference: "R Programming for Data Science", by Roger D. Peng. pdf file available at http://leanpub.com/rprogramming
- Recommended reference: "R Graphics Cookbook" by Winston Chang, First Edition (2012), Publisher: O'Reilly, ISBN: 978-1-449-31695-2.
- Recommended reference: "Mastering Software Development in R" by Peng, Kross, and Anderson. https://bookdown.org/rdpeng/RProgDA/the-r-programming-environment.html

(D) Grading:

- mid-term exam ..... 25 %
- final project (or final exam) ..... 35 %
- homework ..... 25 %
- class participation ..... 15 %