INTRODUCTION TO R STATISTICAL ANALYSIS SOFTWARE

SYLLABUS

Summer 2023(August 14, 2023 - August 18, 2023)

Instructor:	Lifeng Ren	**Time:**	1PM-4PM, Central Time
Email:	ren00154@umn.edu	**Place:**	Ruttan 135B and Zoom
Office Hours:	After class: 4PM-5PM; Ruttan 135B& Zoom		

Course Description

This course is a preliminary introduction to the R statistical software, specifically tailored for new graduate students. All the lecture materials will be provided on the Github Repository (Here). Rather than encompassing every aspect of R, the course aims to provide a strong groundwork for further in-depth courses such as Econometric Analysis (APEC8211- 8212), Programming for Econometrics (APEC8221), and Big Data Methods in Economics (APEC8222). Once you're acquainted with R's fundamental aspects, you will be capable of effortlessly managing new functions and packages. If we have time, we will go over some other essential coding and research software and languages such as Quarto, LaTeX, Git, Markdown, etc.

Reference

There are many excellent references out there. Here are some textbooks or online available notes I suggest you guys read or at least have a PDF version in hand for reference.

- Introduction to Econometrics with R
- R for Economics
- Data Visualization with R: by Rob Kabacoff
- Matloff, Norman. The art of R programming: A tour of statistical software design. No Starch Press, 2011. (PDF version available through UMN Library or you can find it online)

Syntax Cheat Sheet

- Data Wrangling with dplyr and tidyr
- Basic
- data.table
- dplyr

Installation

- Download and Install R and R studio on your desktop from this website

Exercise

To learning coding better, we all need practice more. So, we will have several exercises both in-class and after-class. They are **optional** and are only designed to help you improve your level of understanding.

- I will provide a typed answer key to all exercise I assigned with Quarto's Markdown (.qmd) or R Markdown (.rmd) code (maybe also LaTeX(.tex) file depending on time). You are free to use my code as a template for yourself. [1]
- My teaching goal is to make sure everyone can finish the in-class exercises. If possible, we will spend couple minitues every class to go over the after-class exercise as a review first.

Class Style

We will code together and I will expalain the code while we are coding them. We will have a 5 mintues break every hour.

Tentative Class Schedule

Date:	Tasks
Before Class:	Install the R, R studio and required libabry
8/14/2023	Workflow; Other necessary coding/study tools for PhD studies. Introduction to R: dataframe and R-studio interface.
8/15/2023	Data Manupulation and Data Cleaning: tidyverse, data.table
8/16/2023	Functions, loops, and Simulations.
8/17/2022	Econometrics with R:aer
8/18/2022	Data Visulization: ggplot2

[1] I strongly recommend you guys spend some time right now to obtain this skill since LaTeXis a modern way for economists to write papers, present at conferences, etc.