R language and data analysis

Fall, 2016

Time: 8:00-11:25 am, Thursday

Place: 106, Crescent building

Instructor: Prof. Qiang Shen (沈强)   (johnsonzhj@gmail.com)

1. No. of credits: 2 CEU credits (8 weeks × 4 lessons)

2. Prerequisites: Probability and statistics.

3. Aims:

   1. Get the ability to import/export, manipulate data and run effective statistical computing with R.

   2. Acquire the skills to do the programming and simulation in R.

   3. Know how to illustrate the data with graphics by virtue of the powerful visualization function of R.

4. Assessment: 15% Class attendance + 7% In-Class presentation + 48% Homework + 30% Final Report.

5. Recommended Textbook: R in action (2nd edition). Robert Kabacoff. Manning Publications, 2015.

Course Schedule:

Week	Topics
1	Background, brief introduction to R and the basics of data structures
2	Data import and output, Basics of data frame and Vectorization in R
3	Basic plotting: use the built-in R package for R graphics.
4	Advanced data manipulation
5	Summary statistics, its visual illustration and t test
6	String manipulation in R, ANOVA and linear regression analysis
7	Programming: control structure, loop structure, function and simulation and debug.
8	Advanced plot in ggplot2 and reproducible research