Introduction to R for Social Scientists
CS&SS 508

Winter 2011 Syllabus

Course website:  http://students.washington.edu/gailp2/CSSS508
Instructor: Gail Potter
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Course Meeting Times and Location:
Lectures: Friday 10:30-11:20 in Savery 117
Lab (optional): Friday 11:30-12:20 in Savery 117

Office Hours:  By appointment


Grading and homework:  The course will be graded credit / no credit.  There will be biweekly homework assignments, and you need to do all five homework assignments in order to pass the class.  There will be no final exam, but the final homework will include review of the entire curriculum.  A detailed homework schedule is given below.  Homework solutions will be posted online.  You are welcome to work together on the homework, although it is generally advisable to grapple with the problems alone for a while before discussing them with others.

Course information:

This course familiarizes students with the R environment for statistical computing (http://www.r-project.org).  R is a freely available, multi-platform, and powerful program for analysis and graphics similar to S-PLUS.  We will cover the basics of organizing, managing, and manipulating social science data; basic applications; introduction to programming; graphics, linear regression, logistic regression, and links to other major statistical packages.

Weekly lectures occur on Friday mornings and cover chapters 1, 2, 3, 5, 9, and 11 of the text.  A detailed schedule of material to be covered is given below.  The optional lab session is an open, supportive environment where students explore R’s capabilities at their own pace with assistance from the instructor as needed.  During lab, students are welcome to:

- Work on optional practice problems related to that day’s lecture material (which I will provide)
- Work on the homework, and ask for hints when you are stuck
- Ask ANY questions about lecture, homework, and lab problems
- Ask me ANY R-related question – from a research project, another class, or elsewhere!
Detailed Schedule

Lecture 1 – 1/7/11
Text: section 1.1
Course introduction, example of R’s capabilities, installing R, installing and loading packages, R as calculator, entering and leaving R, saving work in R, R help.

Lecture 2 – 1/14/11
Text: section 1.2
Vectors, matrices, matrix arithmetic, categorical variables, lists

Lecture 3 – 1/21/11
Text: section 1.2
Data frames, indexing, conditional selection, sorting and sub-setting data, reading and writing data frames

Lecture 4 – 1/28/11
Text: chapter 2
Sampling, probability distribution calculation (p for probability, d for density, q for quantiles, r for random sampling)

Lecture 5 – 2/4/11
Text: section 3.2-3.4
Graphics: scatter plots, histograms, box plots, graphics for grouped data

Lecture 6 – 2/11/11
Text: section 1.4, 1.2.16
Writing functions, programming in R, if statements, if/else statements, for loops, while loops, the apply and tapply functions

Lecture 7 – 2/18/11
Text: sections 5.1, 5.2
Linear regression, output interpretation, residual plots

Lecture 8 – 2/25/11
Text: section 5.3, chapter 9
Linear regression (continued): model selection, model comparison, prediction

Lecture 9 – 3/4/11
Text: chapter 11
Logistic Regression

Lecture 10 – 3/11/11
ANOVA, t-tests, and additional topics.
Homework Schedule

Homework 1: assigned 1/7/10, due 1/21/10
Covers lectures 1 and 2

Homework 2: assigned 1/21/10, due 2/4/10
Covers lectures 3 and 4

Homework 3: assigned 2/4/10, due 2/18/10
Covers lectures 5 and 6

Homework 4: assigned 2/18/10, due 3/4/10
Covers lectures 7 and 8

Homework 5: assigned 3/4/10, due 3/16/10
Covers lectures 9 and 10, and review of prior material