Preparing for the Exam

The exam will have a closed book, closed computer section that will be multiple choice and short answer based on the conceptual issues of the course. It will also have an open book, open computer section in which you will do statistical analyses using R.

Terms

You should know the meanings of all the terms introduced in this class. You won’t be asked to define them, but usually asked to produce or recognizing instances of them. Be particularly aware of the important distinctions (e.g., categorical versus quantitative) and terms used in describing models.

R

You will not have to memorize R functions – on the open book portion you can use any reference materials that you want. You will be expected to read R output of various sorts as described below.

Interpreting statistical analyses

In several of the questions on the closed book portion, you will be presented with R output that summarizes a statistical analyses. You’ll be expected to interpret it. For example, you might be presented the result of a linear model and asked to interpret one or more of the coefficients. You will also have to read typical graphical summaries such as histograms and boxplots.

Topics

Here is a list of the topics of each of the “half days”.

1A Models, Variation, Samples
1B Data
2A Random processes
2B Graphing relationships among variables
3A Mean and standard deviation
3B Densities as models
4A Sampling
4B Lines
5 Sampling distributions
6A Evaluation linear models
6B The normal model
7A Probability
7B Non-linear models
8A Experiments
8B Two groups
9 Variety of linear models
10A Linear models, fitting and plotting
10B Process models (the assumptions in linear model inference)
11 Confidence intervals
12A Sums of squares
12B Uncertainty in measurement
13A Propagation of uncertainty
13B Hypothesis tests