Stat 205: Nonparametric methods

Professor Art Owen

This course covers nonparametric statistical methods, a field defined by what it is not. Classical alternatives to parametric modeling are largely based on ranking, ordering, and permuting. Modern developments center on the bootstrap. There is also the jackknife, cross-validation, empirical likelihood, and smoothing.

We will emphasize the classical methods as they are not covered much in other courses. A course on nonparametrics would not be complete without some treatment of modern methods. But the coverage of modern methods will be kept to a minimum, so as not to preclude students from taking this course and a course on the bootstrap.

Prerequisites

Probability at the level of Stat 116 and one MS level Statistics course such as 200 or 201 or 191. Students are expected to know or learn Splus in order to do the problem sets.

Texts

The primary text is “Nonparametric Statistical Methods” by Hollander and Wolfe. It covers traditional nonparametric methods. You will also need “Bootstrap Methods and their Applications” by Davison and Hinkley, for coverage of the modern methods with a computational emphasis.

The (optional) text “Modern Applied Statistics with S-Plus” by Venables and Ripley is available for students who want to learn S-Plus. The (optional) text “An Introduction to the Bootstrap” by Efron and Tibshirani is available as a supplemental discussion of bootstrap methods.

Computing

Students may get accounts on the Leland system.

Evaluation

25%  Closed book Midterm, on Wednesday February 20.
35%  Take home final, due Wednesday March 20, at 5pm.
40%  Three to five problem sets.