Math 159, Spring 2005
Applied Nonparametrics – ML 208
Professor Hardin
syllabus

Instructor: Jo Hardin
226D Millikan
phone: 607-8717 (home: 624-5860, not after 9pm)
e-mail: jo.hardin@pomona.edu
www: http://pages.pomona.edu/~jsh04747
office hours: MW 2-4pm, or by appointment

Text: *Practical Nonparametric Statistics, 3rd edition*, by Conover
Bootstrap Methods and Permutation Tests, by Hesterberg, Monaghan, Moore, Clipson, and Epstein
Not required: *Introductory Statistics with R*, by Dalgaard

Exams: We will have two midterm exams (on Tuesday, 2/22/04 and Thursday 4/07/04) and a final exam (on Thursday, May 5th, 9am)

Homework: Homework will be assigned from the text at most classes and is designed to help you keep up with the material. In order to understand the material, it is vital that you complete the homework. Some of the homework will be done with pencil and some will be done on the computer. One homework grade will be dropped.

Computing: We will be using R for many of the homework assignments. R is freely available at http://www.r-project.org/ and is already installed on the machines in Andrew. There will be one introduction to the software.

Grading:

20%	Homework
50%	Midterm Exams
25%	Final Exam
5%	Class Participation

Please feel free to stop by, email, or call if you have any questions about or difficulty with the material, the computing, the projects, or the course. Come see me as soon as possible if you find yourself struggling. This material will build on itself, so it will be much easier to catch up if the concepts get clarified earlier rather than later.

ENJOY!

The prerequisite for this course is an introductory statistics course as well as calculus I. The topics in the first two chapters that you will be responsible for include:

1 Probability Models

1.1 Counting

Experiment, Event, Rules 1-3

1.2 Probability

Sample Space, Prob, Prob Func, Cond Prob, Independence (def 1-10)

1.3 Random Variables

Independence, Cond Prob, Prob Func, Prob Dist, Binomial, Discrete Uniform, Hypergeometric (def 1-6 and 10)
NOT Joint Dist, Cond with Joint Dist (def 7-9)

1.4 Properties of RV

Quantiles, Expected Value, Variance (def 1-4)
NOT Expected Value of 2 RV, Covariance, Correlation (def 5-7)

1.5 Continuous RV

Discrete/Continuous, Normal, Central Limit Theorem (thm 2), Chi-sq (thm 3) (def 1-4)

2 Statistical Inference

2.1 Populations, Samples, and Statistics

Pop, Sample, Random Sample, Measurement Scales, Statistic, Order Statistic (def 1-4)

2.2 Estimation

Empirical Distributions, Quantiles, Unbiased Estimator, Confidence Intervals (def 1-3)
NOT Bootstrapping (until later), Survival Curves, Kaplan-Meier Curves

2.3 Hypothesis Testing

Tests, Test Statistic, Critical Region, Errors, Null Distribution, Power, P-value (def 1-9)

2.4 Properties of HT

none for now