Statistics 6730
Introduction to Computational Statistics
2 semester hour course

Prerequisites: STAT 6301 and 6302 or equivalent; STAT 6410 and STAT 6450, or STAT 6910 and 6950, or permission of the instruction

Exclusions: Stat 673

Class distribution: one 55 minute lecture, and one 55 minute lab per week.

Text: Statistical Computing with R by Maria L. Rizzo, Chapman & Hall, 2008. Other useful references will be highlighted as the course progresses

Conversion note: Converted from a 3 credit hour quarter course (Topics are unchanged)

COURSE DESCRIPTION

This course is an introduction to computational statistics, a rapidly expanding area in statistical research. Students will learn how to manipulate data, design and perform simple Monte Carlo experiments, and be able to use resampling methods such as the bootstrap. Through creating customized graphical and numerical summaries students will be able to discuss the results obtained from their analyses.

TOPIC LIST

1. Introduction to R / Probability and Statistics Review
2. Generating Random Variables
3. Visualization of Data
4. Monte Carlo Integration and Variance Reduction
5. Monte Carlo Methods in Inference
6. Bootstrap and Jackknife
7. Maximum Likelihood Estimation in R
8. Introduction to SAS / Data manipulation in SAS
9. Statistical Inference in SAS