An introduction to S-PLUS/R and SAS. These two very distinct statistical software packages are commonly used in the modern professional practice of statistics and are complimentary in their strengths. S-PLUS is a computing environment for graphics, programming, statistical analysis and mathematical computing. SAS is a production tool for high-volume data management and statistical analysis. The first half of the term will cover S-PLUS/R and the second half will cover SAS. Examples from the practice of applied statistics will be used throughout the course.

Textbook: STAT 462/862 Course Notes
Several online manuals will be available and referenced throughout the course.

Instructor: A. Day
Prerequisite: CISC-101* or equivalent.
Corequisite: STAT-361* or permission of the instructor.

Evaluation: Homework 40%
Midterm test 30%
Final test 30%

Topics:
1. S-PLUS
   - Creating and working with data objects (vectors, matrices, lists, data frames, factors and time series)
   - Introduction to statistical functions and data analysis
   - Writing functions
   - Programming techniques and computational efficiency
   - Random numbers and simulation methods

2. SAS
   - Introduction to SAS: the SAS programming environment, data sets, the output delivery system, and global options
   - The DATA step: reading in data, creating data sets, manipulating data sets, deriving variables and generating text files
   - Commonly used SAS procedures for: sorting and transposing data, printing, tabulating, formatting and obtaining summary statistics
   - Introduction to statistical procedures and data analysis
   - The SAS macro language
   - Structured Query Language (SQL)
   - Advanced topics (if time permits): call execute, IML (interactive matrix language), and the analyst application