Final Exam

- Tuesday **12/11/2012**, 12:00 — 3:00 pm, in class
- closed book and notes, two formula sheets (double-sided) and scratch papers allowed, calculator needed, stat. tables to be provided
- **Coverage**: S & Y, Chap. 2, 3, 4, 5, 7, 8
- **Possible Types of questions**: “True or False”; theoretical proof/derivation; numerical calculation based on given R-outputs, etc.
- **Suggestion**: problem-oriented review
Various criteria for model selection (Section 5.1): effects of using a misspecified model

Multicollinearity detection: VIF, condition index, variance decomposition (with response $y$ incorporated)

Multicollinearity remedies: ridge regression, PCA, partial LS (canonical correlation), generalized ridge regression

Transformations (Section 5.3): Box-Cox family, the scaling issue

Weighted LS and generalized LS (Section 7.1): effects of using OLS when some assumptions do not hold

Polynomial regression and response surface problems (Section 7.3): the delta method and Fieller’s method (applicability)
ANOVA one-way (Section 8.2): unbalanced designs allowed, identifiability (constraints on parameters), ANOVA table, testing linear hypotheses and constructing related CI’s, power calculation

ANOVA two-way (Sections 8.3 and 8.4): balanced designs only, identifiability (constraints on parameters), main effects and interactions, plotting cell means, hypothesis testing for interactions, ANOVA table