Chapter 4—Logistic Regression

- Interpreting the logistic regression model
  - Linear approximation interpretation
  - Odds ratio interpretation
- Inference for the multiple logistic regression model
  - MLEs for the coefficients, score functions, information matrix
  - Overall hypothesis test for $\boldsymbol{\beta} = 0$
  - Tests and confidence intervals for individual coefficients: $H_0 : \beta_j = 0$
  - Confidence intervals for the logit and probability of success
  - Estimation of odds ratios
- Logit models for qualitative predictors
  - Dummy variables
  - Inference for a dichotomous covariate
  - Various forms of coding for categorical predictors
  - Models with two qualitative predictors
  - Estimation of odds ratios
  - ANOVA-type representation
- Models with interaction and confounding
  - Estimation of odds ratios

Chapter 5—Building and Applying Logistic Regression Models

- Variable selection
  - Purposeful selection of variables
  - Stepwise selection procedures
- Summary measures of model fit–AIC, AIC_C, and BIC
- Summarizing predictive power
  - Classification tables
  - ROC curves
- Model checking
  - Goodness-of-fit tests
    - Deviance and Pearson tests for categorical predictors
    - GOF for continuous predictors–Hosemer-Lemeshow test
  - Model comparison tests
  - Deviance and Pearson residuals
  - Diagnostic measures of influence
  - Marginal model plots
  - Potential numerical problems
  - Exact logistic regression

Chapter 6—Multicategory Logit Models

- Models with several response categories
  - Multinomial distribution for responses
- Model for nominal responses
  - Baseline category logits–generalized logits
  - Simultaneous versus individual fitting of logits
  - Estimation of response probabilities using generalized logits
  - Tests for effects
- Ordinal response models
  - Cumulative logit models
    - Proportional odds models
    - Estimation of cumulative logits
    - Estimation of response probabilities using cumulative logits
    - Test for independence
    - Test for proportional odds model
  - Adjacent-categories logit models (not covered on Test 2)
  - Continuation-ratio logit models (not covered on Test 2)