

**Statistics 110/201**  
**Fall 2017**  
**Lecture 19 Outline**

The lecture will be a combination of writing on the board and covering the 7 page example posted on the website for “Analysis of Covariance.”

Main topics:

- ANOVA written as a regression model (Section 7.5; partially covered in last Friday’s discussion)
- Analysis of Covariance (ANCOVA), Section 7.6
- Extended example (on webpage; and pages 368 – 374 in textbook)

Detailed outline:

1. Review 2 methods for writing one-factor ANOVA model (Cell means; factor effects)
2. Introduce 3<sup>rd</sup> method of writing one-factor ANOVA model – as a regression model with “intercept” and with indicators for K-1 of the categories.
3. Introduce extended example, which is Example 7.17 in the book.
4. Interpret coefficients for the 3 ways of writing the model, using grocery example.
5. Write the null hypothesis for the 3 ways of writing the model.
6. Show the results on page 2 of the extended example.
7. Introduce the idea of Analysis of Covariance, including definition of covariate.
8. Write the ANCOVA model.
9. Conditions for ANCOVA
10. Tests for ANCOVA
11. Extended example, page 3
12. When order matters, extended example page 4
13. Estimating and predicting in ANCOVA
14. Comparing results for the Factor when doing ANOVA and ANCOVA – why they differ.
15. Testing conditions in ANCOVA