FINAL EXAM REVIEW TOPICS COVERED SINCE THE MIDTERM REVIEW

NOTE: The final exam is cumulative but will focus more on the material after the midterm. This review sheet covers topics after the midterm only. You should study the topics on the midterm review sheet as well. The final exam is open notes and you should bring a calculator.

1. Multicollinearity – what it is, why it's a problem, what's affected by it and what's not.

2. Interpreting coefficients and tests when multicollinearity is present.

3. Variance inflation factor – what it measures, why and how it's used.

4. Nested F tests – how they work, what can be tested with them.

5. ANOVA table for regression.

6. Breaking down SSTO into parts for full and reduced models; notation such as SS(A|B) and how it's used for nested F tests.

7. Interaction in regression – how to interpret it and how to put it in a regression model, including when one variable is quantitative and the other is categorical.

8. Polynomial models – what they are and how to use them.

9. Model selection – overview, including how to think about it and what steps to take.

10. Model selection methods – all (best) subsets, and various stepwise methods.

11. Model selection – comparison criteria (Cp, Adjusted R^2, MSE).

12. Case diagnostics to find outliers and influential cases – why use them, what each measure is used to detect, how to interpret them. When it's okay to remove cases and when it's not.

13. Analysis of variance, including the models and details for the one factor case, how to construct the ANOVA table and test.

14. Tukey, Fisher and Bonferroni multiple comparison procedures and the need for multiple comparisons and/or multiple testing.

15. Two-factor ANOVA, including how to write the model, assumptions, interpretation of interaction and main effects. How the tests differ for unbalanced two-factor ANOVA based on type of SS used.

16. How to interpret cell means (interaction) plots, including whether they show an interaction, a Factor A effect and/or a Factor B effect.

17. Randomized block designs – what they are and why they are used.

18. Random versus fixed effects – how to decide whether a factor is fixed or random.

19. Crossed and nested factors – how to recognize a nested factor, and what terms can (or can't) go in the model if a factor is nested under another factor.

20. Repeated measures designs, identifying "within groups" and "between groups" factors.

21. Analysis of covariance (ANCOVA) – why it's used, how to interpret the tests for factor effects for ANOVA versus for ANCOVA.