STAT 308 – Exam 2 Study Guide

Chapter 8

* Matrix algebra will NOT be on the exam
* Interpret estimates of parameters from R output in the context of the problem
* How to interpret the differences in the r-squared values when we add additional variables to the model
  + Eg. What is the difference in the r-squared for a model with X1 and X2 vs a model with just X1 and what does this mean in the context of the problem
* What happens to the r-squared when we add additional variables to the model
* What is the relationship between the estimate of the regression variance, sigma^2, and the mean squared error from an ANOVA table

Chapter 9

* How to obtain mean squared errors and F statistics for different models from an ANOVA table with multiple variables (similar to question 1 in homework 6)
* How to identify what the correct null and alternative hypotheses should be when adding a certain number of variables to the model
* How to identify the correct null and alternative hypotheses for testing for overall significance of a model
* How to write an appropriate conclusion for a particular hypothesis test
* How to read an ANOVA table to determine the appropriate F statistic and p-value for a test

Chapter 11-12

* How to determine what R uses as a baseline value for a categorical variable
* Make a prediction for the response for a given value of the categorical variable using the R output (similar to Homework 8, but without a numeric variable present)
* Be able to interpret the estimates of the parameters for a categorical variable from an R output
* Be able to perform a hypothesis test to determine if adding a categorical variable to our model is significant
* Be able to perform a hypothesis test to determine if adding an interaction term to our model is significant

Chapter 14-15

* When do the assumptions of homoscedasticity and normally distributed residuals not hold
* How can we transform the response/add a polynomial term to the model to make the asssumptions hold
* Interpret model parameters when we have a transformed response variable

Chapter 16

* For each type of variable selection criteria (AIC, C\_p, adjusted r^2), do we want to minimize or maximize these criteria to find the “best” model