The exam is arranged in topical order. The subject matter is arranged in the following order:

- Analysis of variance [with many independent samples]
- Regression analysis – multiple predictors – the dummy coded format
- Two-factorial ANOVA [each with two levels and with multiple levels]
- Analysis of Covariance (ANCOVA)

In general, the questions focus on understanding the logic of the SAS programs and interpretation of the output. Specific areas of coverage include:

- The statistical equivalent of the ANOVA model – in terms of µ’s
- The statistical equivalent of the regression model – in terms of β’s
- The assumptions on the errors (normality, unbiasedness, constant standard deviation)
- Understanding of where the side-by-side box plot comes from
- Similarities between proc anova and proc glm when the data is balanced
- Interpreting the p-value associated with the F-statistic in the ANOVA tables
- Interpreting Duncan and Tukey post hoc tests
- Interpreting PRESS scores in the proc reg step
- Function of dummy coded variables as the mechanism that “translates” analysis of variance into regression format
- Y=CONSTANT ➞ THIS IS A MODEL THAT TESTS THE ANOVA NULL HYPOTHESIS IN REGRESSION TERMS. What is the null hypothesis in ANOVA parameters?
- Function of checking the assumptions on the error in conjunction with interpreting the ANOVA/Regression F-statistics. The F-statistic assumes that the assumptions are met so we have to check them.
- Scatter plot, Normal plot and Residual plot
- Interpretation of Normal and Residual plots
- Contrast codes in factorial ANOVA
- How to discern the various types of ANOVA problems in the proc glm step
- Function of checking for a significant interaction effect to determine that running ANCOVA is appropriate for the data
- What are the alternative hypotheses that factorial ANOVA and ANCOVA test?

I’ve tried to design the final to be as straight forward is possible. There are 25 short-answer questions and you can omit two of your choice. It should take 60-90 minutes but you will have the full three hours.

Distance learning students, the exam will be posted to the web right at 6:00 p.m. on July 18, 2002. You have until Wednesday, July 24, 2002 to complete it and return it to me.

THE EXAM IS OPEN BOOK/OPEN NOTES.