Homework assignment to be collected for grading is due at 11:59pm Sunday, March 28th. Please send your answers to [jluo@clemson.edu](mailto:jluo@clemson.edu) with subject “STAT 8010 homework”

1. The Agricultural Experiment Station of a university tested two different herbicides and their effects on crop yield. From 90 acres set aside for the experiment, the station used herbicide 1 on a random sample of 30 acres, herbicide 2 on a second random sample of 30 acres, and they used the remaining 30 acres as control. At the end of the growing season, the yields (in bushels per acre) were as follows. use alpha=0.05

Sample mean sample sd sample size

Herbicide 1 90.2 6.5 30

Herbicide 2 89.3 7.8 30

control 85 7.4 30

1. Use the data to determine if there is any difference in the mean yields.
2. Check the conditions required for analysis in part a. Is there violation on the condition?
3. An industrial psychologist working for a large corporation designs a study to evaluate the effect of background music on the typing efficiency of secretaries. The psychologist selects a random sample of four secretaries from the secretarial pool. Each subject is exposed to three types of background music: no music, classical music and hard rock music. The subject is given a standard typing test that combines an assessment of speed with a penalty for typing errors. The results are given here with a high score indicating a superior performance. The data is given below.

subject

type of music 1 2 3 4

no music 20 17 24 20

hard rock 20 18 23 18

classical 24 20 27 22

1. What experimental design is this? Put down the statistical model for the design.
2. Construct ANOVA table for the question. Are there differences in the mean typing efficiency for the three types of music? Are there differences in the four subjects?
3. Compute the relative efficiency.