MS Module 13: Two-factor ANOVA, no interaction effects (overview 3rd edition)

(The attached PDF file has better formatting.)

(Readings from the third 3rd edition of the Devore, Berk, and Carlton text.)

Reading: §11.4, Two-Factor ANOVA without Replication

Without replication means $K_{ij} = 1$: one observation per cell.

If $K_{ij} = 1$, we compute the error sum of squares by assuming the model is additive. We can not examine the interaction effects, since discrepancies from the additive model are assumed to be random fluctuations. Figure 11.4 is a visual representation of additive vs non-additive models. Example 11.14 shows an additive model. The notation can be confusing; be sure to distinguish i and j in the equations. Example 11.15 shows the arithmetic.

The plots in this textbook are produced by R or other statistical software; R is worth learning for actuarial work. You will be tested on normal probability plots (Figure 11.6a), not residual vs fitted plots (Figure 11.6b).

Read the section "Expected Mean Squares," which may be tested on the final exam. Skip the section "Multiple Comparisons," which deals with Tukey's procedure.

Read the section "Randomized Block Experiments" and Example 11.17. Be sure you can compute Table 11.9 from Table 11.8. This example shows the SAS output; the R output is similar.

Skip the section "Models for Random Effects."

Review end of chapter exercises 45, 46, 47 a and b, 48a, 49, 52 a and b, and 53. The comment in 48a and 58a about subtracting a constant saves you computation time if you do the work by pencil and paper.