

University of California, Davis
Department of Biomedical Engineering

Winter 2025 Advanced Design of Experiments BIM 283
David M. Rocke for Biomedical Engineers January 28, 2025

Homework Assignment 4

Due February 6, 2025

The data for problems 3.8, 3.15, 4.1, and 4.2 are in the zipped data file.

1. Do problem 3.1 in the text. Use `t.test()` with the default options.
2. Do problem 3.8 in the text. Use a paired t-test on the differences by using a one sample t-test with `t.test()` with the default options. You can also do this problem as a block design using `lm()` with two predictors, tube, and compartment (A/B). Compare the results.
3. Do problem 3.15 in the text. Use `t.test()` with the default options.
4. Do problem 4.1 in the text. You do not need to do the “graphical analysis” in part b). Part c) is not well specified, so instead, find confidence intervals for the 6 differences in suppliers. Three of them are in the output of `lm()` and the other three can be computed using `coef()` and `vcov()`.

$$\text{Var}(A - B) = \text{Var}(A) + \text{Var}(B) - 2\text{Cov}(A, B)$$

5. Do problem 4.2 in the text. You do not need to do the “graphical ANOVA”.