

CHE384 Data to Decisions
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Homework #10 – Design of Experiments

Turn in your solution with the answers to the questions below. Also, email to me the supporting spreadsheet and/or R script that you used to perform the analysis. (Please name the file using this format: HW10_yourname.xlsx or HW10_yourname.R).

Consider the full factorial Oxide Thickness data found in the spreadsheet “Design of Experiments.xlsx” using thickness as the response variable.

1. Build a Main Effects model (that is, a model with only linear terms in A, B, C, and D).
 - a) Which term (A, B, C, or D) is the most important?
 - b) Which term(s), if any, are not statistically significant?
2. Now add all possible interaction terms to the model.
 - a) Create an ordered list of terms and their coefficients. Note that the extreme coefficients (very large magnitude) are the most significant ones.
 - b) How might you decide which terms are large enough to include in the final model?
3. Suppose you decide to include only the terms A, B, C, AB, and AC.
 - a) Are all the model terms significant?
 - b) Compare the model coefficients for this model to the corresponding coefficients from the models in problems 1 and 2. What can you conclude?