**Homework 7**

Richard L. McCormick

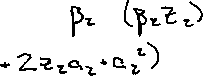
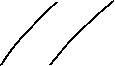
Northern Arizona University

STA471: Statistical Regression

Dr. Jin Wang

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# Problem G: If we believe in the “origin-shift” criterion, is the model: **Y = β0 + β1X1 + β2X2 + β12X1X2 + β22X22 + β122X1X22 + ε** a “well-formulated” one?



# Problem H: The data shown below, which relate to a study of the quantity of vitamin B2 in turnip green, are taken from the “Annual progress report on the soils-weather project, 1948,” by J. T. Wakeley, University of North Carolina (Raleigh) Institute of Statistics Mimeo Series 19 (1949). The variables are:

## X1 = radiation in relative gram calories per minute during the preceding half day of sunlight (coded by dividing by 100),

## X2 = average soil moisture tension (coded by dividing by 100),

## X3 = air temperature in degrees Fahrenheit (coded by dividing by 10),

## y = milligrams of vitamin B2 per gram of turnip green.

## These data were used by R. L. Anderson and T. A. Bancroft in Statistical Theory in Research, McGraw-Hill, New York, 1959, on p. 192, to fit the model:

## Y = β0 + β1X1 + β2X2 + β3X3 + β12X1X2 + ε

## Develop a suitable fitted equation using these data and compare its form with the form of the one fitted by Anderson and Bancroft.