STAT 700
Homework 9 Problems
due Wed. Nov. 28

(2) Problems. Please follow the Lab report directions off the homework web page and work in HW Groups.

1. You should be thinking about your class project. Please see the Project Information linked off the course web page. Your project group can be the same or different than your Homework Group. There will be a Data Analysis Project Proposal and Presentation Submission that will be available on Blackboard, for both a Proposal and Presentation Slides.

For each member in your HW Group, please list the other members in the Project Group, if they are different than your HW Group.

2. Nonlinear Mixed-Models: We will use the R dataset `Indometh` on the pharmacokinetics of indometacin. (See the help file in the nlme library for more information.) We will follow the class example Soybean analysis.

(a) The `Indometh` is a grouped-data class, so you can plot the data by Subject. Does it look like a linear mixed model is appropriate for this data? Explain.

(b) We will fit a nonlinear mixed model to the data. The nonlinear model we will fit is a biexponential model. What is the functional form of the biexponential model? (Hint: see the link to the bottom of the help file for the dataset `Indometh`.)

(c) There is a R `SSbiexp` function that we can use to obtain starting values for our nonlinear model. Use the `nlsList` function to obtain starting values. What starting values for parameters are obtained?

(d) Use the `nlme` function to fit a nonlinear mixed model to the `Indometh` dataset. Include a summary of the model fit.

(e) How well does the model fit the data? Include and examine the diagnostics plot of the residuals. You should also look at a Q-Q plot of the residuals.

(f) Use the R `augPred` function to plot the fitted values for the "best" model. Does it look like a nonlinear mixed model predictions are reasonable?