Stat 305 C - Exam 1 Topic Outline

1. Introductory concepts (Ch. 1-2)
   a) Population and samples
   b) Validity, accuracy, and precision of measurement
   c) kinds of data: categorical, numeric (quantitative), discrete, continuous, univariate, multivariate, paired
   d) Variables: treatment, blocking variables, concomitant variables, factor, response, predictor
   e) observational vs. experimental studies
2. Study design (Ch. 1-2)
   a) Designs: completely randomized design, factorial design, block design
   b) Simple random sampling and randomization
3. Descriptive statistics (Ch. 3)
   a) graphical and tabular displays: dot diagrams, stem and leaf plots, frequency tables, histograms, bar plts, boxplots, scatterplots, quantile-quantile plots, theoretical QQ plots (especially normal plots)
   b) quantiles
   c) numerical summaries: mean, median, mode, variance, standard deviation, range, IQR
   d) statistics vs. parameters
4. Relationships between variables (Ch. 4.1-4.2)
   a) Fitting and interpreting a regression line with least squares (SLR by hand)
   b) Checking model usefulness with correlation and R^2
   c) Checking model validity with residual plots
   d) Analyzing and interpreting computer output for fitted polynomial regression and multiple regression equations.