SP/RM[1,1] project: You can choose from the list of projects below (or convince me of a project you feel would be better), but you are required to do the following:

1. Choose two main factor (one whole-plot factor and one sub-plot factor)
2. Have at least two levels for the main factor.
3. Have one other factor that is both an experimental unit for the whole plot factor and a blocking variable for the sub-plot factor)
4. Replicate at least 3 times the whole plot factor and two times for the sub-plot factor combination
5. Determine the best way to do randomization of your experiment, and describe your randomization process.
6. For the report, please include the following:
   1. Introduction
      1. What is your research question?
      2. What are the null and alternative hypotheses?
   2. Data Collection
      1. How did you randomize?
      2. What was the factor(s) and response?
   3. Factor Structure
      1. Create the factor structure
      2. Describe what design you planned on using
   4. Descriptive Statistics
      1. Numerical Descriptive Statistics
      2. Graphical Descriptive Statistics
      3. “Tell a story” based on what you see in your descriptive statistics
   5. Inferential Statistics
      1. Checking Requirements
      2. ANOVA table, df,SS, MS, F, p-value
      3. Decision rule (level of significance)
      4. Any mean differences or mean treatment combinations that stand out?
   6. Conclusion
      1. General Conclusion of your results based on decision rule
      2. Why do you think you got the results you did?
      3. What would you have done differently?
      4. Any follow up studies that you would have done?

Different possible projects:

1. factors:

clothes dryer (A,B), temperature setting, load

responses:

time until dryer stops

1. factors:

pan (aluminum, iron), burner on stove, cover for pan (no, yes)

responses:

time to boil water

1. factors:

pack on back (no, yes), footwear (tennis shoes, boots), run (7, 14 flights of steps)

responses:

time required to run up steps and heartbeat at top

1. factors:

width to height ratio of paper sheet, slant angle, dihedral angle, weight added, thickness of paper

responses:

length of flight of paper airplane

1. factors:

brand of rubber band, size, temperature

responses:

length of rubber band before it broke

1. factors:

orientation of football, kick (ordinary, soccer style),steps taken before kick, shoe (soft, hard)

responses:

distance football was kicked

1. factors:

distance from basket type of shot, location on floor

responses:

number of shots made (out of 10) with basketball

1. factors:

temperature, position of glass when pouring soft drink, amount of sugar added

responses:

amount of foam produced when pouring soft drink into glass