Advanced Scientific Research
Summer Work Assignment, Summer 2016

Due Date: July 25, 2016 no later than 7:59 am in Google Classroom

Google Classroom Code (if you have not yet joined): gv7g4z

Note: In general, I am philosophically opposed to summer work. Therefore, this is intended to be relatively more thinking and less work-intensive and also to be beneficial to you both for this class and in another way. Because we have such a short time together before you go out to internship, I believe that these two assignments are worth doing. Each has its own assignment in Google Classroom.

Part 1: Write a brief paragraph in which you tell me a possible broad research topic and a possible kind of data you could collect at the internship contact you find for Dr. Berkemeier.

Some examples from previous semesters include the following. A few more are listed in the powerpoint in Google Classroom.

- GE
    - Broad Research Topic: turbines
    - Possible Data: extract data from GE databases of events that precede power outages
- Digital Music Studio
    - Broad Research Topic: sound perception with application to music therapy
    - Possible Data: survey of people's response to different kinds of music
- Georgia Tech BME Lab
    - Broad Research Topic: brain cancer (Gliobastoma Multiforme)
    - Possible Data: # cancer cells remaining after different delivery methods of a protein known to cause apoptosis

Part 2: Frame, execute and report a small applied scientific research using the format in the powerpoint.

1. Ask a question to which you would like to know the answer.
2. Create a hypothesis and a procedure to test the hypothesis. Note that you should have repeated trials and control all variables except for your one independent variable.
3. Collect the data from your experiment. Analyze it.
4. Decide if your hypothesis is supported or not.
5. Write a conclusion.
6. Include supporting evidence.

For this, choose something that will help you in your college search, that fits into what you are doing this summer if you have an internship, or that would be a fun experiment with your friends. Other examples are in the powerpoint.

- Use college as your independent variable and vary it among your top ten choices. For your dependent variable, research something that matters to you: cost vs. benefit; med school admissions; etc.
- Perform an experiment with tennis balls or paper airplanes, or types of soil.