## Heat Transfer Experiment #1

As part of your grade in this course you are going to propose, carry out, and write up a simple heat transfer experiment. A good experiment will have the following components to it:

* Measurements that can be taken using basic equipment (temperature, time, electrical power).
* And one of the following:
  + Use of heat transfer equations to relate measured data to an experimental variable
  + Use of heat transfer equations/principles to validate the experimental findings

The report will be small (probably just a few pages) and should provide a reader with enough information to understand what you did, and to replicate it if they wanted.

Many past experiments were done using cooking equipment (oven, stovetop, etc.). Some examples include:

* Baking brownies in three different pans (each with unique thermal conductivity, thickness, and radiation factors).
* Baking cupcakes with: no liner, paper cup, aluminum cup, both paper and aluminum cups.
* Cooking ground beef on a slatted grill, on a flat pan (on the same grill), and on a modified pan with spikes (on the same grill).
* Measuring thermal conductivity of various plastics.
* Using Fresnel lenses to heat metal objects, then using a small calorimeter to measure the thermal energy stored in those objects.
* Experimentally determining overall thermal resistance of various insulated coolers.
* Experimentally measuring heat transfer rate from an ice tray as it goes from liquid to solid.
* Measuring overall heat transfer coefficient (U\*A) of various transmission coolers.

## Assignment:

For this homework assignment I want you to type up and turn in the following (one submission per team is fine).

1. Names of students on your team (1-3)
2. Short description (a few sentences) about what you want to measure, and how you plan to do it.
3. Short description about how you are going to use heat transfer equations/principles as part of your experiment.
4. A preliminary list of materials and supplies that you will need to do this experiment. If they are items that need to be purchased give an approximate quantity you will be using, and cost for each item.