

1. Experimental Project

- a) Obtain a flat bottom container and fill it with a few water a few mm's in depth. Using a metal bar and a bolt create a "charge configuration" in the container, e.g. $V_{\text{bar}} = 5V$, $V_{\text{bolt}} = 0V$, and use a multimeter to map the potential in the space around the charged objects.
- b) Using your computational program, calculate the potential for the same distribution and compare your results.

You will have access to any necessary equipment. You most certainly can ask for assistance from faculty in the department, and you may ask Dennis for help locating supplies and test equipment.

You may work with one other student on this project building and testing a single devices, but each of you must submit your own report.

The reports!

Everyone must make an individual written [typed] report about their experiment. The report should use whole sentences, proper grammar, and should be written as if you were explaining this to someone who had NONE of the background material. That is, YOU MUST EXPLAIN HOW YOU DESIGNED AND CONSTRUCTED YOUR DEVICE, AND HOW YOU ARRIVED AT YOUR RESULTS USING ENOUGH WORDS SO THAT SOMEONE COULD DUPLICATE YOUR WORK BASED ON YOUR WRITTEN DESCRIPTION.

The report should contain the following sections:

- An introduction (a standalone description of what you were asked to measure and a statement of whom you partnered with.) This introduction should reprise the hypotheses you are being asked to test.
- A description of how you tested each hypothesis (a sketch showing how the experiment works and how you took the data)
- Data that is clearly displayed in a meaningful manner to be understood by the reader.
- An analysis of the data including any uncertainties in your results from your measurements.
- A standalone conclusion statement of the project (what was the most interesting and/or important aspect of what you discovered?)

Grading:

Clarity, Presentation, and grammar:	40%
How you attempted this calculation:	30%
The analysis and interpretation of the data:	30%