Phys 115: Inquiry Into Physics	**First Assignment, due Tuesday Sept. 4th**
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There is one question in this assignment. Read it carefully; think about it; think about how you're thinking about it. What assumptions might you be making? What assumptions might someone else make? What knowledge and experience do you have that might be related?

Please feel free to talk with others in the class– it really helps to get other perspectives – but, please, write your own essays. And, please, don't go ask your friend the physicist or the engineer, or look for answers on Google. That sort of thing won't help you in this course! It could even hurt.

Along the same lines, **don't worry about being "right" just yet**! You're shopping around and collecting ideas, mostly from your own mind, and if you worry too much about being "right" too soon you're liable not to find as many good ones.

Please type or print on a word processor (be sure the ink is dark enough to be read), **and make four copies** (one will be for me and the other three will be for fellow students in class). Please also email them to me at ayush.courses@gmail.com

At some point we might work it out to exchange your essays by e-mail or upload them on Blackboard (the ELMS system), but most people have a hard time drawing good pictures on the computer—either they don't know how to do it or it takes them a long time. (Some graphic artists get very good at it.) And for almost all the questions in this course, it's going to be hard to express your ideas clearly without drawing pictures. So for this first time anyway, please bring in printed copies.

<u>Hanging Block problem</u>

Consider the problem that we talked about in class on Wednesday. You are holding a metal block hanging from a rope lowered into a glass beaker when the beaker is empty. Then your friend fills the beaker with water, so that the block is well under water. Compared to when there was no water in the beaker, would the block now feel heavier, lighter, or the same?

As we saw during the class discussion, different students had different ways of thinking about the question. I want you to consider here at least two

different ways of thinking that could lead you or someone else to different answers. In particular, explain:

A) Your impression for what should be the answer, and try to identify what in your knowledge and experience is giving you that impression;

B) at least one other answer you or someone else might give, and try to identify what knowledge and experience would lead to that answer.

C) What do you think is wrong about the reasoning in part B.

In other words, I want you to write an argument (part A), a counter-argument (part B), and a response to the counter-argument (part C). The response is the hardest part. Don't just repeat your argument from part A: ***respond*** to the reasoning in the counter-argument. What about their argument leads them to what you think is a wrong prediction? Your response should not just say why your reasoning in part A leads to what you think is the correct prediction, but why the thinking in part B leads to what you think is an incorrect prediction. One good way to write a response is to come up with a situation in which the counter-argument would be correct, and then describe how that situation is different from this one. For example, "That reasoning would work fine if _____, but in this case _____." Another possibility is to show that the reasoning of the counter argument when applied to a different, common situation implies the wrong result. For example, "If that reasoning were correct then _____, and we know that isn't true."

<u>My concern in this essay has to do with your ability to construct and respond to arguments, NOT with your ability to get the right answer. Getting to right answers is valuable, but right now I would like you to focus on reasoning.</u>