Philosophy 5330: Philosophy of Science
Fall 2019 – Assignment 1

You must email your answers to me before 5:00pm on Friday, October 4th. I believe it would be best to answer these questions immediately and before thinking hard about Kuhn, but I didn't get the questions to you on time and that is not fair (and would not lead to good work). So I gave you more time before it is due. But if I were you, I would get started soon and space out your work over the next two weeks so as not to be stuck doing all of them too close to the deadline.

Answer these three questions. Each answer is meant to be short, but long enough to show that you are being thoughtful. I expect a good answer to be perhaps 350-500 words.

Collaboration: Collaboration on this assignment is encouraged. Students are free to discuss the topics with one another, read each other's papers, and offer suggestions. The only restriction is that each student must do their own work and write their own paper containing their own ideas and words.

1. Think about the problem of induction as presented in the Hume and Salmon readings. It seems as though Hume is saying that we can't be justified in making any predictions at all about the future (say, for example, that the bowling ball will not come back and smash Professor Silvia in the face). This seems crazy as we clearly are justified in making that prediction (so I boldly assert). Do any of the proposed solutions of the student seem to be on the right track? Pick one and try to develop it if you can (or develop your own). Make sure to think about how the interlocutor in the story responded and respond back. You don't have to actually believe that the defense will work to show that you understand how it might go.

2. In chapter 2 of *Philosophy of Natural Science*, Hempel seems to suggest that you can know that a hypothesis is false (by Modus Tollens) but that you could never know that a hypothesis is true – you could only get confirming evidence for it. But then later in chapter 3, he introduces the idea that auxiliary assumptions are needed in order to get the hypothesis to actually entail any observations. Does this mean that not only can you never prove a hypothesis true, but also that you can never falsify a hypothesis either? In other words, did Semmelweis actually rule out the hypothesis that childbed fever was

caused by miasmas in the air? How about out the priest hypothesis? If he didn't rule them out, could he have? How? If you think you can't rule them out, how is scientific knowledge possible? Don't we know a lot?

3. What is Hempel trying to do when he gives a theory of "scientific explanation"? Is there such a thing? Is there a single, correct theory of it? Think about the different types of views that Salmon mentions and also think about the variety of explanations discussed in Hempel and Salmon as well as in the biological papers by Beatty, Waters, and Woodward. Is there something that unifies all good scientific explanations? If you think there is not a *single* thing, then can we at least give a theory of good scientific explanations of type 1, type 2, type 3, etc.? Maybe we could have good *physical* explanations and good *biological* explanations. Or maybe good *causal* explanations vs. .... (something??). If your answer seems optimistic, try to at least give some hints pointing toward the correct theory. If your answer seems pessimistic, then at least try to deal with the question of how we could know if some proposed scientific explanation was a good one or not. After all, surely some *proposed* scientific explanations are good and others are bad/not explanatory.