Questions asked on 3x5 cards

September 7, 2023

Dr. Dave Shattuck

Question: Who grades the exams?

Answer: Dr. Ramachandran and I grade the exams. Typically, over the course of the semester, we will divide the problems evenly between us. For a given problem, the same instructor grades that problem for all students.

Comment: Your teaching is phenomenal. However, I feel we aren’t doing enough problems in class. We don’t utilize the time wisely.

Reply: Thank you for the nice words. On the topic of doing enough problems in class, I would note that we used to spend most of our time in class doing example problems in class without much interaction. When we were doing this, our pass rate in this course was consistently about 50%. When we changed our approach to make class more interactive, our pass rate rose to around 80%, sometimes higher, at least before COVID. Students regularly ask me to spend more time working problems on the board, thinking that they will learn most effectively if I do that. I believe that they are mistaken, and there are reasons why I believe this is true. This reply is already quite long, so I do not want to go into the reasons here. I would note that I am doing what I am doing for reasons which have been considered carefully. I would also note that we are not behind schedule. If we do fall behind, we may need to make adjustments.

Question: Do we have to integrate or can my calculator integrate?

Answer: Yes, you have to integrate. You also need to multiply, divide, perform trigonometry calculations, and take square roots. I encourage you to do all of these things, including integration, using a calculator. If your calculator does not integrate, I encourage you to find one that does, and learn to use it.

Question: When is the first quiz?

Answer: Generally, I prefer to allow students to choose quiz dates. The dates for quizzes on the schedule are listed as tentative for this reason. We will take votes of the class as needed to set the dates. There will be some dates where I will determine the dates of quizzes, typically when I am out of town.

Question: How are the quiz dates tentative?

Answer: They are tentative until we decide on them in class. There will be no “pop” quizzes. The exception will be the questions asked in Top Hat, for which you may have no notice. However, those questions are only for extra credit.

Question: Is there a trick to figuring out if it is absorbed or delivered?

Answer: No. There is a method to figuring out whether charges absorb or deliver energy as they move through a device. If you do not know the method, you should ask about it. I explained this method in class recently, but I am happy to repeat myself.

Question: Why do we have elements that are dependent on either the voltage or the current somewhere in the circuit?

Answer: We have these elements so that we can model amplifiers. Amplifiers are crucial to engineering. For example, we could not build computers the way we do without amplifiers. These elements are crucially important.

Comment: That last homework (Homework #2) was pretty hard but it really helped.

Reply: I know that it is hard. I am pretty sure that part of the reason it helped was because it was hard.

Question: Do we concern ourselves ever with the mechanisms that produce voltage or current in this course?

Answer: No, not to any significant extent. That will be addressed in later courses.

Question: What device inside a circuit act as an independent current source?

Answer: For one example, an electric fence acts as an independent current source. I suspect that you do not think of this situation as a circuit, but we will. Our circuits are not just PCBs (Printed Circuit Boards). However, just to give you one more example, we use a self-biased transistor in differential amplifiers. This transistor is modeled as a current source, to bias the other transistors involved. No, you do not need to understand anything I have said here. Still, you did ask.

Question: in what situations do we use [W] and which do we use [S]?

Answer: We use [W] for resistance, and [S] for conductance. We will define these quantities soon.

Comment: I feel like questions are taking a lot of lecture time.

Reply: I agree! Isn’t that great? I look forward to this every lecture!

Comment: Class is too slow. Too much time is spent answering questions.

Reply: I profoundly disagree. You are entitled to your opinion on this value judgment, but my values derive from the benefits that result from questions and answers, that lead to understanding. I encourage you to give me a chance to change your mind.