

# Thoughts from Class Today

In engineering, everyone is obsessed with problem-solving. But few are concerned with problem-finding.

Asking or finding the right question is harder than giving an answer. There are many ways to do something wrong but usually, only one way to do something right, which makes the issue of finding the right, interesting, and important problems a top priority.

That is what I take away from ECE 410 taught by Jont Allen. I had not taken a course like this and probably will never (unless Dr. Allen teaches it) because this is a course that is different taught by a guy who thinks differently. Does Dr. Allen think outside the box? Well, no because there is no box.

In this case, the nonexistent box is the structure of a curriculum that every student expects. Every class at the university promises to teach x, y, and z and they follow by teaching x, y, and z. Everyone knows what to expect, and there's no surprise, and thus no excitement. And that's ...fine? If you're in school to get a job, I suppose the university fulfilled the expectation. But if you're interested in advancing humanity, doing important and bright work using our minds, and carrying the torch of progress forward, we need different courses. ECE 410 is a course leading the way in this direction. Less rigid and less structured. Instead, we focus on what's exciting and interesting and more importantly we learn how Dr. Allen thinks as well as how to pay attention to what's actually important. We'll come back to this point in a bit but first, why doesn't education in a school environment feel like learning? Because the classes, the curriculum, and the teacher are there to give you context. You are getting context and context and context but in ECE 410 there is no context, it can't be because it does not exist. Anyone, who tries to make a course or class about the brain with an orderly structure with lots of context, is wrong or is lying to you. Why? No one knows how the brain works, and that isn't something to be afraid of. Rather be excited about, which is why we need fearless teachers with an objective of advancing science, reductionist curiosity, and seeing being wrong as a learning opportunity.

Instead, ECE 410 with Jont Allen is an opportunity for him as the professor and us as the students to take on an adventure to figure out how the brain works. At first, I was confused because of how disjointed some topics seemed like Michael Levin's groundbreaking regenerative biology research, Gyorgy Buzsaki's theory on how the brain encodes information, and of course listening to our very own Jont Allen's expertise on the cochlea. Looking forward, they all seem disconnected but it is only when you look backwards that you can connect the different pieces and discover a puzzle never seen before. For instance, if there's a topic that confuses everyone no matter who they are, it's entropy. This is a tricky topic because of the material but also the history. Well, not for Jont Allen as he is probably the only person alive who fully understands it. This topic was so meaningful to me that I took the class recording and uploaded it on YouTube ([https://youtu.be/\\_EBtypbeBo8](https://youtu.be/_EBtypbeBo8)) for everyone and anyone in the world to have the opportunity to learn from him.

Sure, I could take a course on how the brain works. In fact, I don't even need to take a course. I could find any textbook, online class, or whatever and learn facts about the brain and how we think it works. But I cannot do is have the chance to have someone like Jont Allen to walk the journey together because the most valuable aspect is seeing how to think about these problems from the type of mathematical modeling to recognizing, what you'd say in French, "bullshit."

This is why ECE 410 is special not because of the material but because of the messenger. This class is a playground for Jont Allen to think deeply about exciting ideas about the brain, and in teaching this class, he's able to gain perspectives and think thoughts that he would not have had otherwise because of the questions students might ask. I could have a theory or thoughts on the brain works but I don't have the experience, specific knowledge, and mindset that someone like Dr. Allen has. Because in seeing how Dr. Allen mind works I gain something I cannot describe nor point to but it's something that I can feel and I'm sure it will pay off in the future, by improving my ability of problem-finding.

University of Illinois graduate, Richard Hamming once said, "If you do not work on an important problem, it's unlikely you'll do important work. It's perfectly obvious." I want to do important work so I have to work on important problems, and the way to know what the important problems are is to learn through classes like ECE 410 and teachers like Jont Allen.