**What do you think is the added value of service-learning?**

“I think that one of the big points of a university is to teach students how to learn: to learn about how the real world works. I’m very excited about hands on learning. Real problem solving is often quite different from the problem set approach. If you are trying to learn something by doing research about how the world works, you will encounter all kinds of problems where things don’t work the way you hoped they would work or things just fail and you have to figure out what failed and how to get it fixed again. I’d like to be able to give students a little bit of guidance on how to think about things. I am convinced that students can actually come to the place where they internalize things that we’re really trying to teach them. For example, something like mass conservation. It’s this abstract idea but it has real implications. If you think of it in terms of this abstract idea and then something funky happens with your experiment, you will be tempted to not bring it to bear to this real-world circumstance. But if you’ve done multiple routines of problem solving where you’re reminding yourself that, ‘Mass must be conserved in this circumstance and therefore, based on what I am observing, this must also be happening because mass conservation says it must be happening.’ If you begin to use mass conversation as one of your tools, then it becomes internalized and you actually, in your gut, you believe it. Which is very different from being able to answer a question on an exam that says, ‘Yes, mass is conserved.’ If we want to generate or produce engineers who can go out and solve real problems in the world, they need to have internalized these core understandings.”

**What would you tell other faculty about service-learning?**

“You know, the world is changing and there’s a new cohort of students that is coming in with a lot of motivation to make the world a better place. I think it has become part of the social consciousness that there are some pretty big problems on this planet and we should probably be working on them. There might be other goals beyond making money that could be possible motivating factors. I think that by connecting with that passion you just go so much further. Students are highly motivated if they can see how what they’re working on connects with a real world problem. They’re willing to throw their souls at it and it’s much more fun. I would argue that there are so many ways that courses in the university could be structured to engage with that.

If you teach a course and you can’t figure out why that course is really exciting, you should not be teaching that class. I remember years ago saying how I really enjoyed teaching fluid mechanics and somebody looked surprised by that. But if you know how fluid mechanics work there are so many things you can do! That enthusiasm has to be part of teaching the class! You have to be able to make the connection between the theory that you’re teaching and why that matters on planet earth.”

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**AguaClara**

Dr. Weber-Shirk directs an engineering team that develops sustainable water treatment technology. The AguaClara plant design is gravity-powered, electricity-free, and scalable to fit the needs and size of any community. The program provides undergraduate & graduate students the opportunity to enhance their education with hands-on experience working on projects with real life applications.