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Faculty Spotlight:
Metin Duran, PhD, Civil & Environmental Engineering

In this interview series, we will bring you inside the world of Villanova's professors and explore how their work relates to creating a sustainable future. In this first issue, we got to sit down with Metin Duran PhD, a professor in the Civil &Environmental Engineering. Dr. Duran has a very insightful outlook on sustainability and is involved with some cutting edge research in his field.

Where did you begin your academic career?

I studied Civil and Environmental Engineering at Istanbul Technical University (ITU) in Turkey. ITU is the third oldest technical university in the world, and at the time, was one of seventeen universities in Turkey. The University was considered a working class school, with a hands-on learning focus. Given the school's competitive nature, there was definitely a "survival of the fittest" mentality.

Why did you come to the United States of America?

I came to America in the mid-90s to obtain my PhD in environmental engineering from Vanderbilt University. My thesis focused on process maximization aspects of anaerobic digestion within the wastewater treatment field. It was a new technology being developed in response to the Clean Water Act. There were, however, some limitations to my research. No one considered the possibility of cogeneration because energy was so cheap.

Where did life take you after Vanderbilt?

I returned to Turkey and taught Environmental Engineering for a few years, but I decided to come back to America to further my career and build a family. After returning to America, I conducted post doctoral research at Bucknell doing a feasibility study on a nearby landfill. We were trying to determine whether or not the landfill owners could economically extract biogas, but the project never ended up getting funding. After finishing my post doc, I came to work at Villanova University.

How long have you been teaching at Villanova?

14 years. I really enjoy the interface between teaching and research that Villanova encourages. Villanova has strong infrastructure for environmental engineering research, which makes the school attractive to sponsor agencies.

In your own words, how would you define sustainability?

This is not ours, resource is limited. Shale gas is not ours, we have to be careful about how we use our resources so future generations are not disadvantaged. We can achieve the necessary savings for future generations by making simple choices.

VILLANOVA UNIVERSITY
Sustainability

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Faculty Spotlight: Continued

Why is sustainability important to you, both professionally and personally?

Professionally, it's what I do. Environmental Engineering deals with maintaining the well-being of society.

Personally, I am a big sucker for kids. The next generation deserves a chance. I don't like to think of sustainability as saving the Earth, the Earth has been around for billions of years and it's not going anywhere. Instead, sustainability is about saving the future of the human race.

What is your current research focused on?

I am still working on anaerobic digestion, but I have some new ideas that focus on water and energy. Dr. Wenqing Xu, my fellow Environmental Engineering professor, and I are currently working on biochar filters that would be used to clean biogas. Biogas is very expensive to clean with present technology and these filters would make the process more affordable. I am also investigating biological processes that would reduce the energy required to remove nitrogen from wastewater.

Do you ever collaborate with other academic departments for your research?

If you're going to change anything, it must come from fundamental science. Thus, I often work with both the Chemistry and Biology departments. I have also recently been in touch with a professor at the Law School, Joseph Dellapenna, with regard to water laws.

Do you incorporate sustainability in the courses you teach?

Calling any of the topics I teach "sustainable" wouldn't change much about the material itself. Instead, I like to emphasize the big picture of why water treatment is important and how wastewater is a resource in of itself. This goes hand in hand with the concepts behind sustainability.

If you could create any course, what would it be?

I would like to turn my water-wastewater treatment topic into a project course. Students would each be given a town and be tasked with designing water treatment infrastructure within the population constraints. Instead of having lectures, there would be one-on-one meetings to guide the students through the design process. I believe that learning by doing works very well for engineering.

Written by Thomas Saldutti '17, Civil & Environmental Engineering.