Environmental Engineering and Earth Sciences

EEES Department Seminar

Microbial ecology, cell-cell signaling, and implications for biofilm treatment

Dr. Jeseth Delgado Vela
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Amidst growing challenges such as urban densification, climate change, aging infrastructure, and pandemics, engineers must develop an equitable, environmentally sustainable, and resilient urban water cycle. I will highlight results from modeling and lab scale systems showing how studying microbial interactions within wastewater treatment systems can advance treatment. I will present a study where the microbial community in a biofilm is implicated in reducing energy requirements, chemical addition, and greenhouse gases related to wastewater treatment. Lastly, I will discuss our ongoing research trying to understand microbial signaling, both between bacterial populations and between bacteria and the viruses that infect bacteria (phage). Our ultimate goal is to control who grows in a biofilm or prevent biofilm formation. By integrating modeling and experimental approaches across multiple scales, I uncover unique insights into microbial processes in our urban water system.

About the speaker:

Dr. Jeseth Delgado Vela is an Assistant Professor in the Department of Civil and Environmental Engineering at Duke University. She integrates molecular tools and modeling to understand how microbial community interactions and dynamics affect engineered water treatment systems. Dr. Delgado Vela earned a Ph.D. and M.S. in Environmental Engineering and M.S. at the University of Michigan, and a B.S. in Civil Engineering from the University of Texas at Austin. She was a recipient of the Ford Foundation Dissertation Award, was named an Early Career Research Fellow by the Gulf Research Program, and was awarded an NSF CAREER Award.

2:30 PM

Friday, March 8, 2024

Brackett 100

Attendance is mandatory for graduate students enrolled in EES 8610, GEOL 8610, BE 8610, and EES 8910.

Refreshments after the seminar.