PURDUE UNIVERSITY | Environmental and Ecological Engineering

EEE Research Seminar

Date: January 25, 2022 at 10:30 AM
Location: POTR 234 (Fu Room)

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Infonomics Lab
Executive Director

Leveraging convergence research to enhance global health engineering in the circular economy and industrial sustainability

Abstract

Our water, sanitation, and food systems are critical to the short and long-term health of the population. Advances in the circular economy and industrial sustainability provide increased efficiency in delivering key resources to people (i.e., water and food) and removing dangerous materials (i.e., waste/sanitation) from people; however, they can also increase the complexity of targeted interventions (i.e., devices, information, or policy) and hide faulty systems (i.e., water or food) that negatively affect the health of the population. Three key drivers of poor population health are limited access to potable water due to climate change, unmanaged sewage and increasing abundances of antimicrobial resistant pathogens, and poor food safety. However, data continues to become more abundant throughout our society and can provide critical insights to solutions of pressing global health problems if proper tools and data streams are integrated and used.

In this seminar Dr. Voth-Gaeddert will present a set of tools he has applied to global water, sanitation, and food challenges in his professional practice and research. These tools include machine learning for problem detection, latent variable (structural equation) modeling and bioinformatics for targeted problem and root cause assessments, and system dynamics modeling and cost-effective analyses for assessing long-term system health and effective interventions. Finally, Lee will discuss his vision for developing and integrating these tools into the robust global health engineering framework at Purdue and how this can contribute to improving the health of our population.

Bio

Dr. Lee E. Voth-Gaeddert is an Environmental Health Engineer working on water, sanitation, and food safety issues around the world. He is a licensed professional engineer, a registered sanitarian via NEHA, and a certified systems engineer via INCOSE. Lee is an entrepreneurially minded academic dedicated to the sustainable alleviation of poverty with expertise in 1) water, sanitation, hygiene, and child health, 2) antimicrobial resistance, 3) food insecurity, 4) complex systems modeling and molecular bioinformatics. He obtained his PhD and MS at Missouri University of Science and Technology and acquired post-grad experience at Tufts University and the University of the Witwatersrand in Johannesburg. In addition, Lee has worked for the United Nations, the US Centers for Disease Control and Prevention, the US Agency for International Development, the US Peace Corps, the US Department of State, and several private consulting firms and innovation labs. Lee has over 20 peer-reviewed publications and regularly gives national and international presentations.