PURDUE UNIVERSITY | School of Sustainability Engineering and Environmental Engineering

SEE Research Seminar

Date: September 2nd, 2025, at 10:30AM
Location: POTR 234 (Fu Room)

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Advancing Education in Sustainability and Environmental Engineering through Technological and Curricular Innovation

Abstract

This presentation will highlight Dr. Zhang's achievements and vision in technology and curriculum innovations in the context of Sustainability Engineering and Environmental Engineering (SEE) education. SEE is a convergent field of research and education that adopts an integrated approach to address global sustainability and environmental problems. Innovations within SEE education are critical for learning, discovery, and engagement in this field. Zhang's ongoing vision for SEE education utilizes a three-pillar approach: (1) broadening engineering engagement through effective recruitment based on the Diffusion of Innovations theory, (2) forming ethical engineers through the integration of sustainability into the engineering curriculum guided by the Engineering for One Planet (EOP) framework, and (3) enhancing student learning through the application of extended reality combined with AI in SEE training and education. Examples to be discussed in this presentation include (1) a virtual reality operational environment of a 30L bioreactor for biomanufacturing and SEE lab training, (2) sustainability curriculum innovations in multiple institutions to evaluate the efficacy of the EOP-aligned module in fostering a deeper understanding of environmental sustainability, and (3) a mixed-method project on effective recruitment strategies for engineering bridge and success programs.

Bio

Xinyu Zhang is an Assistant Professor of Engineering Practice in the School of Sustainability Engineering and Environmental Engineering (SEE) at Purdue University and a licensed Professional Engineer (PE). Zhang holds a Ph.D. in Environmental Engineering from the University of Illinois at Urbana-Champaign. She returned to academia after spending several years in engineering consulting and entrepreneurship and has since then been actively engaged in teaching and curriculum innovation for undergraduates, graduates, industrial professionals, and regulators in the fields of environmental, biological, chemical, and civil engineering. Her research interests include the application of extended reality combined with AI in biomanufacturing training and education, sustainability curriculum integration, and broadening engineering engagement. She is the PI of two NSF projects: (1) NSF BCSER Award #2450295, "Effective Strategies to Recruit Underserved Students to Baccalaureate Engineering Success and Transition Programs (Recruit-BEST)" and (2) NSF RFE NLI Award #2533640, "Collaborative Research: NLI: Forming Ethical Engineers: Integrating Embodied Carbon Education to Foster Ethical Responsibility in Environmental and Social Sustainability".