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SPCEET RESEARCH SEMINAR SERIES

HOW COGNITIVE NEUROSCIENCE CAN INFORM ENGINEERING EDUCATION

DATE: WEDNESDAY, APRIL 9TH
TIME: 11:15 AM - 12:15 AM
LOCATION: Q 315

BIO

Dr. Tripp Shealy's research integrates cognitive neuroscience with engineering education and design. He explores how behavioral and cognitive interventions can enhance creativity and problem-solving in engineering students and professionals. A key focus of his work is helping engineers incorporate energy and climate considerations into the design of the built environment. Dr. Shealy serves as the graduate coordinator for the Bowman Sustainable Land Development Program, teaching courses on sustainable infrastructure and adaptive reuse. He serves on the editorial boards for the *Journal of Civil Engineering Education*, *Journal of Construction Engineering and Management*, and *Design Science*. He has contributed to *Times Higher Education*, *The Wall Street Journal*, *The Washington Post*, and *NPR*.

ABSTRACT

This lecture explores how cognitive neuroscience can provide novel insights into engineering education. We will examine several research projects, including how priming students to think in systems enhances problem-solving, how biophilic changes in the built environment influence student cognition, how neurofeedback can improve ideation in engineering professionals, and what happens in students' brains when they use ChatGPT to aid in engineering design. The discussion will also cover the methodologies and experimental design challenges involved in this research, highlighting the need for greater interdisciplinary collaboration. The lecture will end with future directions and next steps for integrating cognitive neuroscience into engineering education to enhance learning, creativity, and problem-solving.