

EPICS Director and ECE Professor of Engineering Practice Candidate Seminar



Mark Budnik

Teaching Professor of Electrical and Computer Engineering
Carnegie Mellon University

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10:30 A.M. – Noon

ARMS 1101

<https://purdue-edu.zoom.us/j/92912384832?pwd=abNXHPIDmoUBStVb2M0gEkgHMK4tLt.1>

Abstract: EPICS: Strengthening Today, Scaling Tomorrow, and Sustaining for Generations

This presentation outlines a 1/5/30-year strategy for strengthening EPICS today, scaling it intentionally over the next five years, and sustaining its impact for generations at Purdue University and beyond. The first year focuses on reinforcing core foundations: supporting faculty and staff, advancing vertically integrated teams, deepening community service partnerships, strengthening assessment systems, and aligning resources for long-term growth. The five-year strategy emphasizes disciplined and intentional scale, expanding access to transformative design experiences, deepening industry engagement, cultivating leadership pipelines, strengthening Purdue's role within the EPICS University Consortium, and advancing durable partnerships. The thirty-year vision looks toward legacy, positioning EPICS as the defining model of engineering education integrating academic rigor, sustained community service, reciprocal partnership, ethical responsibility, and institutional resilience. Grounded in experience in engineering leadership, accreditation, professional formation, and large-scale educational innovation, this vision emphasizes stewardship, scalability, and sustainability to ensure EPICS continues forming engineers prepared to serve society with competence and responsibility.

The talk will also include a brief teaching demonstration, *From Millivolts to Meaning: Operational Amplifiers in the Engineering Decision Chain*. Many engineering systems begin with an electromechanical or electrochemical sensor that produces a small, noisy voltage. This fifteen-minute session examines how operational amplifiers elevate millivolt-level signals into robust inputs for engineering decisions. Building from Ohm's Law, Kirchhoff's Current and Voltage Laws, and the properties of an ideal op amp, the session derives a practical signal conditioning stage from first principles. The demonstration models a fundamentals-first approach to teaching, connecting circuit analysis to real measurement systems while emphasizing clarity and disciplined reasoning across engineering disciplines.

BIO:

Mark M. Budnik is a Teaching Professor of ECE at Carnegie Mellon University with more than three decades of experience in the semiconductor industry and academia. His work focuses on experiential design education, creativity, and critical engagement with emerging technologies. He has led academic programs and industry partnerships connecting engineering education with community impact and brings extensive experience in leadership and accreditation. A recipient of national and international teaching awards, he mentors engineers to integrate technical excellence, ethical judgment, and responsible leadership in service to society.

Hosted by Carla B. Zoltowski ~ cbz@purdue.edu