Big Ideas in Evidence-Based STEM Teaching for Student Engagement and Equity

Over the past decade, individual research efforts on university STEM education in a variety of science disciplines have begun to coalesce into a clear and coherent set of big ideas, which generally involve (a) increasing active learning opportunities and (b) making implicit course structures and expectations more transparent to students. These underlying ideas, though, may appear in a dizzying array of granular, detailed teaching methods, which can be tricky to both choose and implement well. This seminar will review key findings from the research on university teaching to help demystify how and why these big ideas are so powerful, especially when it comes to student engagement, inclusion, and equity, and outline a very practical approach to gradually and sustainably making them part of participants’ teaching approaches.

Cassandra Volpe Horii, PhD, is the founding director of the Center for Teaching, Learning, and Outreach at the California Institute of Technology and the current president of the POD Network in Higher Education. With a background in physics (BA, CU Boulder) and atmospheric chemistry (PhD, Harvard), she has focused on the research and practice of educational development—improving teaching and learning through faculty development, course and curriculum development, and organizational development—for over 15 years. Her research interests include preparing future faculty as mentors of undergraduate research, organizational structures in support of systemic educational change, and innovative instructional consultation methods. She is active in several national STEM education efforts, including the National Academies of Sciences, Engineering, and Medicine Roundtable on Systemic Change in Undergraduate STEM Education, and has taught courses in STEM pedagogy, sustainability, expository writing, and atmospheric science.

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Refreshments and Meet the Speaker at 3:00pm