AAE TEACHING SEMINAR

Design, Build, Fly: Advancing Engineering Education, Research, and Student Opportunity Through Space Systems

FRIDAY FEBRUARY 27TH 9:00-9:50AM
ARMS B071 OR ZOOM

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Abstract

Engineering education at scale demands instructors who can translate professional practice into rigorous, engaging learning experiences for diverse audiences. This presentation outlines a vision for contributing to the School of Aeronautics and Astronautics (AAE) at Purdue University through a role grounded in systems-based, experiential aerospace education. Drawing on more than three decades of professional experience spanning military operations, space systems engineering, and university teaching, the presenter describes a design-build-fly approach that integrates teaching excellence, complementary scholarship, and student engagement.

The talk introduces an education-focused framework built around three reinforcing elements: (1) the use of accessible, real-world aerospace platforms–such as CubeSat-class space systems–to teach systems engineering across the full lifecycle; (2) modular and scalable instructional architectures that support continuity across large enrollments and multiple course modalities; and (3) student-centered applied research and design projects aligned with industry, government, and national workforce priorities. These elements collectively support AAE's mission by producing practice-ready graduates, while enhancing student engagement.

The presentation concludes with a plan for developing an area of excellence in teaching and engagement, emphasizing undergraduate instruction, integrated project experiences, and sustainable partnerships that connect Purdue's students to real aerospace challenges, complementing Purdue's research strengths while reinforcing its leadership in workforce preparation, innovation, and impact across the aerospace enterprise.

Biography

Michael H. Sanders, Ph.D., is an aerospace engineer, educator, and senior U.S. Navy officer whose career bridges operational aviation, space systems development, and academic leadership. Rising from an enlisted avionics technician to naval aviator and project officer, his professional path reflects a lifelong commitment to service, technical excellence, and mentorship. Dr. Sanders earned his doctorate in Aerospace Engineering from the University of Maryland while serving on active duty. He currently serves as an Associate Professor of Aerospace Engineering at the U.S. Naval Academy, holding key academic leadership roles including Associate Chair of Aerospace Engineering and Deputy Dean of the School of Engineering and Weapons, where he helped guide curriculum development, faculty engagement, and experiential learning initiatives.

His technical background includes aviation and space systems experimentation and integration while serving at Air Test and Evaluation Squadron (VX) 20 and the Naval Research Laboratory, with major contributions to flight test programs and experimental space programs. His academic research interests span small satellite architectures, space power systems, and CubeSat-enabled education.

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