

IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Interactive Presentations - IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (IP)

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THE INTEGRATED PRODUCT TEAM EDUCATIONAL EXPERIENCE

Abstract

The Integrated Product Team (IPT) is a multidisciplinary and multi-university STEM educational project whose goal is to provide the opportunity for undergraduate scientists and engineers to translate stakeholder needs and requirements into viable science and engineering design solutions via a distributed multidisciplinary team environment in a Pre-Phase A design activity. The core of the project is a two-semester senior design sequence where science, engineering, and liberal arts undergraduate students form multidisciplinary competitive teams to develop system concepts of interest for NASA Science Mission Directorate. The two-semester design sequence for the IPT project emphasizes four key principles that are critical for any new scientist/engineer in the competitive environment of today: systems thinking, communication, teamwork, and design. These four principles are taught over four phases in the two semester sequence: requirements development, team formation and mission architecture development, system definition and development, and system design. Replicating the real world of spacecraft design, the science team members determine the science requirements for the mission, develop the science traceability matrix, select the correct instrumentation to meet the science requirements, and develop the science operations plan. The engineering team members design and develop the spacecraft(s) necessary to accomplish the science requirements and provide Computer Aided Design (CAD) models of each spacecraft.