

IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)  
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EDUCATIONAL ORBITS: LEARNING THE ROPES OF THE SPACE INDUSTRY THROUGH THE  
BIOSAT PAYLOAD TEAM EXPERIENCE

**Abstract**

The BioSat project, a student-driven initiative by Orbit NTNU, offers a distinctive educational platform for a team of multidisciplinary students to engage directly with the challenges of the space industry through the development of a biological payload. This paper presents a reflective analysis of the payload team's journey, highlighting the pedagogical approaches and learning outcomes associated with the hands-on experience of building a satellite payload. Both what has been done right and what could've been better from the start.

The BioSat team's operations are a microcosm of the larger space industry's workflow, composed of students across nine different specialties, from biotechnology to cybernetics. Through the project lifecycle, team members assimilate the industry's standards and practices, from design to launch, fostering a comprehensive understanding of the technical, regulatory, and collaborative intricacies involved in space missions.

This paper will elucidate the educational framework adopted by the team, which combines experiential learning with scaffolded mentorship. We detail how project-based learning (PBL) and agile management techniques are implemented to simulate real-world aerospace project conditions, preparing students for future careers in the sector.

The narrative extends beyond technical skill acquisition, delving into how team members cultivate soft skills vital for the industry, such as cross-disciplinary communication, project management, and strategic problem-solving. We discuss the transformative effect of this experiential learning approach, evidenced by the student's ability to translate theoretical knowledge into practical expertise.

Our contribution to the E1 IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM underscores the role of student payload teams as instrumental learning environments for comprehending the operational facets of the space industry. We aim to provide insights into the educational methodologies that foster industry-relevant skills and to offer a model for effective learning through active participation in a space project.