Paper ID: 83684
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IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
In Orbit: Postgraduate Space Education (4)

Author: Dr. Anja Kohfeldt
University of Oslo, Norway

Dr. Elise Wright Knutsen
University of Oslo, Norway
Mr. Kristian Enoksen
Andøya Space Education, Norway
Dr. José Miguel González Pérez
Andøya Space Education, Norway
Mr. Jøran Grande
Andøya Space Education, Norway

LESSONS FROM THE LAUNCH: REFLECTIONS FROM THE FIRST SEMESTER OF UIO'S SPACE SYSTEMS PROJECT COURSE

Abstract

In the autumn 2023, the University of Oslo (UiO) established a new 2-year master's programme in Space Systems. The goal of this programme is to introduce students with different technical and natural science backgrounds to the basics in space technology, but also to convey system thinking, understanding the bigger picture, and equip students with systems engineering skills.

Besides theoretical knowledge, the students shall gather practical experience that is relevant in the future work environment. In the course, TEK5720 Space Systems Project, the students are responsible for their own mission. They are given a certain budget, a "satellite bus", and a launch opportunity. The satellite bus is based on is the CanSat-v2018 kit, developed by Andøya Space Education (ASE), for educational purposes, such as the CanSat competition and undergraduate programmes.

The students tasks are to come up a mission idea, design, integrate and test their payload and deliver typical documentation along the way. Regular milestone meetings structure the work, providing formative feedback along the way. The grand final of the course is a trip to Andøya Space, host of the newly established Norwegian Space Academy in northern Norway. This institution holds a spaceport along with a range of cutting-edge facilities dedicated to space-related educational programmes. Here, the students participate in an assembly, integration, and testing (AIT) training where they are introduced to a cleanroom working environment, electro-static discharge (ESD) preventing working routines, as well as environmental testing of payloads and space systems. At the end of the course, the students will launch their payload on a weather balloon, gather data and write a mission report.

The course setup simulates all typical mission phases from A-F. The students train to define and track mission objectives and requirements, document and justify their design and conduct basic product and quality assurance routines, such as risk management and test planning. With that, the course provides not only hands-on experience in mechanical, electrical, and software engineering, but also space systems engineering, project management, AIT, and PA/QA, aiming to facilitate experiential learning and simulate a more authentic professional environment.

This paper will present the evaluation of the first year of the UiO Space Systems master's programme in general, and the project course in particular. We will share our experience and present the lessons learned from one year of operation and new collaboration between UiO and ASE.