

AGENCY

Students discover value of Product Assurance and Safety for space missions

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ESA / Education / ESA Academy

A group of ambitious university students have completed a new ESA Academy's training course on [Product Assurance and Safety \(PA&S\)](#) developed in collaboration ESA's Product Assurance and Safety Department. Held at the [ESA Academy's Training and Learning Centre](#) at the European Space Security and Education Centre (ESEC) in Belgium, this was an excellent opportunity for the students to discover more about this important field of work.

PA&S is a series of engineering disciplines. It comprises all the key and supporting processes and associated technologies that guarantee space products accomplish their missions in a safe and reliable way. As one of the course experts from ESA said, "It's not rocket science, but it makes rockets fly".

Attending the course were 22 university students at Master's and PhD level, from 11 ESA Member States. They had varied backgrounds, including Space Engineering, Materials Science, Mechanical Engineering, and Computer Engineering.

The first part of the course was designed to give students a general overview of space projects and the role of PA in industry and ESA. Students learnt that PA is closely associated with Engineering and Project Management in the design, assembly, integration and verification of spacecraft. PA is not a discipline that can be taught solely out of a book; practical experience is important! To this end, ESA experts were on hand throughout to lend their experience.

The second part focused on the PA Disciplines:
Dependability & Safety, Software Product Assurance, Electrical, Electronic and Electromechanical components, Materials & Processes, and Quality Management & Assurance. The experts showed how their own disciplines help to ensure that spacecraft are fit for purpose over their entire mission lifetimes.

Throughout the course students took part in group exercises to apply these new concepts. They applied PA Disciplines to a pico-satellite weighing less than 1kg. They were also challenged to analyse the failure of an Ariane 501 rocket launch!

Upon completion of the course students were able to log their thoughts on the experience. Here is a selection of their comments:

"Talk about extreme engineering! The Product Assurance and Safety training course provided us with an incredible opportunity to become familiar with advanced organisational concepts in the development and execution of ESA's ambitious space missions. Throughout the week I was amazed to learn of the depth in planning and technical coherence necessary to drive these large-scale projects forward. I am especially grateful for the wealth of experiences compiled and shared by our trainers across many fields, and for the international insights that came along with them. Diving into the material through the lens of their personal perspectives truly made the experience nuanced and engaging. There is also much to be said for the value of bringing together several bright, young, and like-minded space enthusiasts from across Europe under a common learning objective. I am deeply appreciative of the friendships that were forged and can hardly wait to learn what places our shared experience and newfound PA&S fundamentals will help us to reach," said a Dutch Engineering Master's student from the University of Toronto.

— Students also visited the PROBA satellites Control Room.

"Attending the ESA PA&S training course has been full-on, deeply fascinating and highly intellectually enriching. Without knowing what to expect, but with high expectations, the ESA Academy really delivered some valuable lessons," said a

Danish Engineering PhD student from the University of Southampton.

"It has been a great pleasure to join this training course! It is a unique experience that merges the passion for space with the pleasure of meeting new people, exchanging points of view and having fun together. I would do it again!" said an Italian Engineering Master's student from the University of La Sapienza.

"The course was amazing. I liked all the modules and the exercises. Also, the teachers were open to questions and comments. I am very happy that you gave me this opportunity to learn more about PA&S in ESA projects. This was my first course at ESA Academy and I sincerely hope that it will not be the last," said a Romanian Engineering PhD student from the University Politehnica of Bucharest.

ESA Education Office regularly organises workshops and training courses. To find out more please visit the [Current Opportunities](#) webpage.

For more information about ESA Academy activities please contact: esa.academy@esa.int

— The students are keen to put their new knowledge to good use!