

AGENCY

Students master Ladybird Guide to Spacecraft Operations training course 2018

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From 11 to 14 September 2018, 30 Bachelor, Master, and PhD students descended upon ESA Academy's Training and Learning Facility, [ESEC-Galaxia](#), Belgium. Equipped with science and engineering backgrounds, and representing 15 different [ESA Member and Associate States](#), they were keen to participate in the Ladybird Guide to Spacecraft Operations training course 2018. They were joined by 30 more university students that did not get a chance to attend in person but were offered to participate online via Livestream instead.

"I took part in the course as one of the 30 online students," said an Italian student from the Sapienza University of Rome. "It has been a fantastic experience, as it was like being there with the other on-site students. I really appreciated the effort of the staff, and I was surprised when I found out I could actively participate in the course by asking questions. Listening to the anecdotes from the ESA expert was very interesting and I'm sure I will be able to use what I learned."

The training course had a clear objective: introduce students to the world of operations, teaching them how to think like an operator, and showing them how each subsystem of a spacecraft influences the way it is operated. The course was delivered in the "Ladybird" style, which is without technical or mathematical jargon. Entertaining lectures filled with real-life examples helped to give students a comprehensive view of spacecraft, subsystems, and operations. The students were even given actual instances of operational mistakes, and were then challenged to work out what had gone wrong, and how they could have fixed, or even entirely avoided, the issues!

On-hand to provide guidance was the Advanced Operations & IOD Project Manager from ESOC's [Operations Department](#). With a wealth of experience at his disposal, he provided valuable information to all students managing to field questions from the online students via a live forum.

To kick off the training course, the participants received a general introduction to operations and discussed the questions of what makes a good operator, and what are the common pitfalls? Then, spacecraft subsystems were discussed in detail, analysing the advantages and problems inherent in various technologies.

A Swiss student from the University of Basel explained, "This was a very instructional course! It opened a window to a whole new world for me by covering so many aspects I would never have learned elsewhere. The engaging style of the lecturer, as well as the interesting discussions with the fellow students from all over Europe, encouraged me to find my professional place in the space industry. All in all, a very inspiring learning experience!"

With the basics mastered, the students were given a group exercise. They were split into three teams, and each were challenged to devise a basic design for a given mission. On the final day, the students put their designs to the test! An operational scenario was presented, in which a spacecraft of their design encountered a series of unexpected problems. The students needed to quickly determine the issues, and speedily suggest effective solutions. They performed well under pressure and all three teams managed to save their spacecraft, but only one was able to recover all the scientific data that was needed! Eight of the online students also completed the group challenge using Skype and impressed the trainer.

The students were evaluated during this group exercise, in order to obtain a grade for their transcripts. With this document and their certificate of attendance, the students are able to gain [ECTS credit\(s\)](#) at their universities for their participation in the training course.

— Group challenges need individual talents as well as teamworking skills

During the week, the students had also the opportunity to visit [ESEC-Redu](#) and to get a special tour of the site, even going inside an antenna, and exploring the [PROBA](#) operation centre.

"I recommend this course to anyone interested in a future career in space exploration and who enjoys a challenge," enthused a Spanish student from the University College Dublin. "By completing the training course, I have learnt what being an operator means and how essential their job is for a successful mission. I have also acquired knowledge that will no doubt be useful in the future and even in everyday life. This experience has inspired me to immerse myself into the field of space exploration even further."

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