

AGENCY

60 students attend Online Ladybird Guide to Spacecraft Operations Training Course 2020

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ESA Academy's [Training and Learning Programme](#) has resumed after a summer break with the 2020 edition of its highly-regarded Ladybird Guide to Spacecraft Operations Training Course.

Moving the course fully online, to ensure safe participation during the COVID-19 pandemic, allowed for a large cohort of 60 Bachelor, Master and PhD students, with a science or engineering background, from 15 different ESA Member States and Canada. The training course was offered by a senior ESA Engineer belonging to the Advanced Mission Concepts and Management Support Office of the [Operations Department](#).

— Introduction lecture on Spacecraft operations

Running over eight morning sessions between 7 and 18 September, the course had two main objectives: teach students how to think like an operator; and explain the ways

in which each subsystem affects how spacecraft are operated. The style of teaching was in line with the "Ladybird approach" where lectures are kept to a general point of view and avoid overly-complex analytical and mathematical detail. Many concrete examples would be given, with students aided by well-designed diagrams that anybody with a general science background could understand and interpret. "I would characterise it as 'A Ladybird Guide to thinking outside of the box'," said a Greek student from the University of Patras. "This course was a combination of engrossing teaching and well-balanced interaction. Thanks ESA not only for getting us closer to our dreams but bringing people having common dreams together as well. I feel immensely inspired and motivated!"

The students were thrown in at the deep end with their very first lesson imparting upon them the importance of having an operator's mindset, flagging a multitude of psychological traps that they would need to avoid in order to be successful in spacecraft operations. Clearly, this would be no ordinary training course! "You can definitely understand how a spacecraft works and the technical and psychological traps you are facing as an operator," explained a Romanian student from Politehnica University of Bucharest. "It was an amazing course, really enjoyable and interactive despite it being held online. It increased my passion for the space sector and, honestly, I didn't think that this was even possible."

The week's lectures were themed around spacecraft subsystems, with course leaders and students discussing the advantages and disadvantages of various technologies within each:

— Lecturers and participants during spacecraft operations training course

- Attitude Determination and Control Subsystem (ADCS)
- Orbit Control System (OCS)
- Power
- Thermal
- Telemetry, Telecommunication & Command (TT&C)
- On-Board Data Handling (OBDH)