

AGENCY

Online Ladybird Guide to Spacecraft Communications Training Course 2022 sees University students problem-solve like ESA engineers!

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In brief

On 21 February, ESA Academy's Training and Learning Programme gave a warm welcome to 30 university students attending the Online Ladybird Guide to Spacecraft Communications Training Course, 2022 edition. The students, from 26 different universities and 10 [ESA Member States](#), Canada and Slovenia, were all studying for bachelor, master or PhD degrees. Two weeks of intense but highly enjoyable tuition would follow, with the students bonding online despite never meeting face-to-face due to the ongoing COVID-19 pandemic.

In-depth

The primary objective of the course was to introduce students to the concepts underlying spacecraft telecommunications. Following a "Ladybird" style meant that lectures avoided complex analytical or mathematical detail, instead making generous use of real-life examples and intuitive diagrams.

"The Ladybird-style training course really helped me to truly understand the fundamental concepts and how they are intuitively interconnected," explained a Canadian student from Polytechnique Montréal. *"The training materials, trainers, and overall coursework surpassed all my expectations, even if it was online! Many thanks for such rewarding experience! I highly recommend this training course to anyone passionate about spacecraft operations and communications!"*

— Discussion of the results of the link budget exercise

The majority of the course was run by an ESA Engineer from [ESOC](#), the [European Space Operations Centre](#) in Darmstadt, Germany. Equipped with many years of

experience, he was able to describe a vast range of genuine scenarios he had encountered during his career. This brought topics to life for the students, immersing them in the problems that can arise during a real space mission. Supplementary lectures were offered by two ESA experts, presenting the ground station activities at ESEC-Redu and the navigation signals and modulation techniques, as well as the payload in orbit testing of Galileo, the European Global Navigation Satellite System (GNSS).

A broad variety of subjects were covered over eight afternoon sessions: