

AGENCY

ESA/ELGRA Gravity-Related Research Summer School 2022 blends online and in-person learning to inspire university students

16/08/2022 1762 VIEWS 20 LIKES

ESA / Education / ESAAcademy

In brief

Thirty university students from 14 different ESA Member States have successfully completed the latest edition of the ESA/ELGRA Gravity-Related Research Summer School. A collaboration between [ESA's Education Office](#) and the [European Low Gravity Research Association \(ELGRA\)](#). Now in its 7th year, the 2022 Summer School ran from the 27th June to the 8th July, using a blended format with the first week being held on-site, and the second online.

In-depth

— ELGRA Expert explaining their research in simulated microgravity

The Summer School aimed to offer an overview of current research under microgravity and hypergravity conditions in both life and physical sciences, exposing students to the benefits of performing research and technology

demonstrations in altered gravity conditions. A host of ESA and ELGRA international experts contributed as trainers giving engaging lectures as well as technology demonstrations.

"The ESA/ELGRA Summer School has been an incredible opportunity to learn about the effects of microgravity on humans as well as the experiments that can be performed under such conditions," explained a Spanish student from the University of Seville. "In addition to receiving talks by experts, we had the opportunity to eat and chat with them, learning about their backgrounds and asking questions. I strongly recommend this Summer School!"

On the very first day, students were introduced to key aspects of gravity along with an overview of gravity-related research topics and the platforms currently available to conduct altered gravity experiments. This was followed by a

— ELGRA expert supporting university students during the team work

fascinating lecture on how to develop experiments for altered gravity environments. The day was not yet over though, as students had the opportunity to visit the [Euro Space Centre](#), where they enjoyed different spaceflight simulators!

The following days featured a full schedule of lectures across life and physical sciences, human physiology, and engineering. Topics were varied, including Gravity Machines, Astrobiology, and Space Medicine. The students were then delighted to meet former ESA Academy hands-on programme participants, who shared their stories along with a wealth of tips and tricks. Workshops were also run to cover project management, and systems engineering and requirements. Then came a real highlight: a guest lecture from [former ESA astronaut Reinhold Ewald](#), who shared his spaceflight experiences.

— Discussion of the experiment ideas during the team check-in of the ESA ELGRA Summer School

"The two weeks were amazing!" enthused an Austrian student from the Technical University of Munich (TUM). "Not only could I attend a broad range of fascinating lectures about gravity related research, but also meet other highly motivated students, coming from a wide variety of different backgrounds. I am very grateful for this experience and want to thank all the experts and tutors who shared their story, let us dive a little deeper in their research, and undeniably inspired me with their great enthusiasm."

Working in small teams, the students devised experiment ideas that they pitched to the other groups and ESA experts. After receiving valuable feedback, each team was assigned a tutor and continued to work with them over the Summer School's second week in order to finalise their research proposal. On the final day, each group presented their refined ideas, along with their proposed experimental platforms:

- The effect of different gravity conditions on biofuel combustion using [Parabolic flights](#).
- The impact of hypergravity on the role of secondary haemostasis in blood clot formation using the [Large Diameter Centrifuge](#).
- Hormonal treatment for combatting muscle atrophy in microgravity onboard the [International Space Station](#).
- Analysis of kinematic differences of gait and mechanical differences in the prosthesis of leg amputees in altered gravity using [Parabolic flights](#).
- The effect of hypergravity on platelet activation and thrombus formation using the Large Diameter Centrifuge.
- Investigation of Alzheimer's Related Proteins in hypergravity using the Large Diameter Centrifuge.

All tutors were very impressed with the work the students completed in such a short time. The quality of the projects was very high, and certainly bodes well for the students' future careers in the space sector.

"What an experience!" said a Greek student from the Hellenic Mediterranean University. "Being part of a multidisciplinary team, getting out of your comfort zone, expanding your knowledge of different scientific and engineering areas, that's what the ESA/ELGRA Gravity-related Research Summer School is all about! I couldn't be more grateful for this opportunity, and I would definitely recommend it to everyone interested in space research!"

To find more information about upcoming and future ESA Academy training opportunities, please check our [website](#).

Contact: tip@esa.int