

AGENCY

University students complete 10-day Online ESA/ELGRA Gravity-Related Research Summer School 2020

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ESA's Education Office and the European Low Gravity Research Association (ELGRA) are pleased to announce the successful completion of the Online ESA/ELGRA Gravity-Related Research Summer School 2020. Running from 22 June to 3 July 2020, this 10-day Summer School was the fifth annual edition, but the first to be held entirely online, in response to limitations imposed by the COVID-19 pandemic. Participating were 30 university students from 11 different [ESA Member States](#). Lectures were delivered by ESA and ELGRA experts from across Europe, introducing students to current research performed under altered gravity conditions, and the impact of gravity-related research.

"This was an invaluable experience for someone looking forward to discovering ESA and space exploration," said a Spanish student from Imperial College London (UK). "I was delighted to meet students and experts coming from a huge range of scientific backgrounds. The mix of multidisciplinary sessions made the Summer School really enjoyable and inspiring. I would definitely recommend this Summer School to any student interested in cutting-edge science."

The Summer School's first week saw students gain a solid grounding in the various aspects of gravity-related research. They began by investigating different platforms used to perform innovative gravity-related experiments, such as centrifuges, drop towers, parabolic flights, and the International Space Station. They were then told about the many opportunities ESA Education Office offers university students to perform their own gravity-related research. The first day concluded with an overview of team project activities: students were divided into small groups and, with the support and guidance of the experts, were challenged to devise their own idea for a gravity-related experiment or technology demonstration.

— Former participant to ESA Hands-On Programmes sharing her experiences.

Day two continued at the same rapid pace. Participants of previous editions of ESA Education's Hands-On programmes shared their experiences and lessons learned with the students, giving top tips and valuable insight. Further lectures

focussed on gravity machines and animal models, complex fluids in microgravity, and space motion sickness. The third day saw the students learn about cell modulation due to altered gravity, and how microbes can support human life in space. Time was also ring-fenced for working on the team projects. Ideas were shared with the experts, who gave their considered opinions and offered useful feedback.

The fourth day centred on technical aspects of gravity-related research, from artificial gravity to technology demonstrations in microgravity. The day ended with a lecture on thermal management in microgravity, before the students once again shifted focus to their team projects. This continued into day five, which was wholly given over to the project work. Each team presented the current status of their project development, and had the opportunity to identify what they considered to be the most critical aspects.

The second week kicked-off with a workshop dedicated to project management, specifically designed to help students with organising the development of their project. While they continued their team work for the rest of the day, experts were on-hand to assist with any issues the teams were experiencing. The next day attendees enjoyed a workshop about systems engineering, which proved particularly useful in the development of their projects. Then came a real treat: former ESA astronaut Reinhold Ewald shared his experiences with the students! A British student from the University of Strathclyde commented on just how much they had learnt: *"I thoroughly enjoyed interacting with ESA and ELGRA experts over the two weeks and have gained invaluable knowledge and experience. Although online, the environment was welcoming and it was easy to interact and get to know the other students. I highly recommend it to anyone thinking of applying!"*

— Last day - time for the students to present their project ideas.

The final days were devoted to the team projects, before participants presented their final plans to a panel of ESA and ELGRA experts. The students were questioned on the