

New Flight Opportunity for School Districts: Announcing Student Spaceflight Experiment Program (SSEP) Mission 20 to the International Space Station, Starting January 6, 2025

Opportunity for a School Community to Engage Grade 5-16 Students in Real Microgravity Experiment Design and Proposal Writing, with One Experiment In Each Community Selected for Operation By Astronauts on International Space Station

STEM Project-Based Learning Through Immersion in an Authentic Research Experience



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If you have a PDF of this document, for active links, go to: <http://ssep.ncesse.org/?p=30312>

Time Critical: interested districts, schools, colleges, and informal STEM education organizations are directed to inquire about the program **no later than October 31, 2024**

Washington, D.C. - The [National Center for Earth and Space Science Education \(NCESSE\)](#) and the [Arthur C. Clarke Institute for Space Education](#) announce a new opportunity for school districts, and 2- and 4-year colleges, across the U.S., Canada, and internationally to participate in the 22nd flight opportunity of the Student Spaceflight Experiments Program (SSEP).

Launched in June 2010, SSEP was designed as a model U.S. National STEM (Science, Technology, Engineering, and Math) education program that immerses students across a community in every facet of authentic scientific research of their own design, using a highly captivating spaceflight opportunity on the International Space Station (ISS). A participating pre-college community (grades 5-12) typically engages 300+ students (at least 100 students). For an undergraduate community at least 30 students need to be engaged.

The program is designed to inspire and engage the next generation of scientists and engineers by providing each participating community their own very real Space Program.

SSEP Mission 20 to ISS will provide *each participating community* a flight certified research mini-laboratory capable of supporting a single student-designed microgravity experiment, and all launch services to fly the mini-lab to ISS for operation by the astronauts in Fall 2025. After 4-6 weeks on Station the experiment is returned to Earth for harvesting and analysis. Mirroring how professional research is done, student teams across the community submit research proposals, and go through a formal proposal review process to select the community's flight experiment. The design competition – from program start, through experiment design, to submission of proposals by student teams – spans 9 weeks from January 6 to March 10, 2025. A curriculum and content resources for teachers and students support foundational instruction on science conducted in microgravity (in a weightless environment) and experiment design. Additional SSEP program elements leverage the experience to engage the entire community, embracing a [Learning Community Model for STEM education](#).

SSEP provides seamless integration across STEM disciplines through an authentic, high visibility research experience—an approach that embraces the Next Generation Science Standards. For school districts—even

individual schools—SSEP provides an opportunity to implement a systemic, high caliber STEM education program tailored to community need. More broadly, SSEP is about a commitment to student ownership in exploration, to science as journey, and to the joys of learning.

SSEP is open to U.S. schools and school districts serving grade 5 through 12 students, 2- and 4-year colleges and universities, informal science education organizations, and internationally through the Center's [Arthur C. Clarke Institute for Space Education](#). SSEP is not designed for an individual class or a small number of students in a community.

Student teams are able to design experiments across diverse fields, including: seed germination, crystal growth, physiology and life cycles of microorganisms, cell biology and growth, food studies, and studies of micro-aquatic life. Experiments require design to the technology and engineering constraints imposed by the mini-laboratory, and flight operations to and from low Earth orbit.

“SSEP is designed to empower the student as scientist, and within the real-world context of science. Student teams design a real experiment, propose for a real flight opportunity, experience a formal proposal review, and go through a NASA flight safety review. They even have their own science conference at the Smithsonian National Air and Space Museum, where they are immersed in their own community of researchers”, said Dr. Jeff Goldstein, creator of SSEP and NCESS Center Director. “SSEP is about introducing real science to our students and if you give them a chance to be scientists, stand back and be amazed.”

SSEP Mission 20 to ISS includes an experiment design competition January 6 through March 10, 2025. Flight experiments are selected by April 11, 2025, for a ferry flight to ISS on a SpaceX rocket launching from NASA's Kennedy Space Center in Florida in Fall 2025. All communities interested in participating in Mission 20 to ISS are directed to inquire **no later than October 31, 2024**.

Heritage: There have been 20 SSEP flight opportunities to date—SSEP on STS-134 and STS-135, the final flights of Space Shuttles Endeavour and Atlantis; and SSEP Missions 1 through 18 to ISS. A total of 242 communities have participated in the program, reflecting 42 States and the District of Columbia in the U. S.; 5 Provinces in Canada; and Brazil and Ukraine each conducting national competitions. Thus far 76 communities have participated in multiple flight opportunities – 31 communities conducting three or more flights – reflecting the sustainable nature of the program.

Through the first 20 flight opportunities (through Mission 18), a total of 161,900 grade 5-16 students across 3,459 schools were fully immersed in microgravity experiment design and proposal writing, 31,385 flight experiment proposals were received from student teams, and 421 experiments were selected for flight. Through Mission 17, 224,600 students across the entire grade preK-16 pipeline were engaged in their communities' broader STEAM experience, submitting 195,000 Mission Patch designs.

381 of 421 experiments selected for flight through Mission 17 have now flown. 38 Mission 17 experiments launched on SpaceX-29, November 9, 2023, from Launch Complex (LC) 39A at NASA's Kennedy Space Center in Florida – the same pad from which all the Apollo missions to the Moon launched. The Mission 17 experiments returned to Earth on December 22, 2023. Another 39 Mission 18 experiments are to launch on SpaceX-31 in October 2024.

SSEP is the first pre-college STEM education program that is both a U.S. national initiative and implemented as an on-orbit commercial space venture. SSEP is a program of the [National Center for Earth and Space Science Education \(NCESS\)](#) in the U.S. and the [Arthur C. Clarke Institute for Space Education](#) internationally. It is enabled through a strategic partnership with [Nanoracks LLC](#), which is working with NASA under a Space Act Agreement as part of the utilization of the International Space Station as a National Laboratory.

The [Smithsonian National Air and Space Museum](#), and the [International Space Station \(ISS\) National Laboratory](#), are National Partners on the Student Spaceflight Experiments Program.

To inquire about the Mission 20 to ISS flight opportunity, first carefully read the SSEP Home Page, which serves as an Executive Summary of the Program, and then contact the National Program Director, Dr. Jeff Goldstein.

SSEP Home page: <http://ssep.ncesse.org>
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About NCESSSE

The [National Center for Earth and Space Science Education \(NCESSSE\)](#) creates and oversees national initiatives addressing science, technology, engineering, and mathematics (STEM) education, with a focus on earth and space. Programs are designed to provide an authentic window on science as a human endeavor. Central objectives of the Center's programs are to help ensure a scientifically literate public and a next generation of U.S. scientists and engineers - both of which are of national importance in an age of high technology. NCESSSE is a division of the 501(c)(3) Tides Center. <http://ncesse.org>

About Arthur C. Clarke Institute for Space Education

The [Arthur C. Clarke Institute for Space Education](#) is dedicated to delivering education programs world-wide that address our planet, its health, and our ability to venture beyond Earth and understand our place in a greater cosmos. The international arm of the NCESSSE in the U.S., the Institute recognizes that all humanity is on a journey aboard spaceship Earth, that the story of our existence knows no national borders, and it should be the birthright for all our children to understand that the explorer lives within them. It is with profound honor and a deep sense of purpose that we continue Sir Arthur C. Clarke's legacy. <http://clarkeinstitute.org>

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