



## All-Boilermaker team to crew Virgin Galactic suborbital mission Purdue 1

Spaceflight expected to carry Purdue engineering professor, graduate student conducting human-tended research experiments in space flight, accompanied by Purdue alumni in space classroom

WEST LAFAYETTE, Ind. — Building on its tremendous space legacy, Purdue University is pursuing a groundbreaking opportunity — research and learning aboard a Virgin Galactic suborbital spaceflight with an all-Boilermaker crew.

The flight, dubbed Purdue 1, is expected to lift off in 2027. Purdue researchers and students plan to personally conduct and oversee experiments in microgravity, setting a precedent for academic access to space. The flight will provide an emphasis on Purdue teaching and research with onboard experiments about how fluids behave in zero gravity — a research area that is critical to advancing spaceflight design, fuel management and future long-duration space missions.

The flight is expected to represent Purdue faculty, students and alumni by featuring a five-person crew that includes Steven Collicott, a professor of aerospace engineering in the [School of Aeronautics and Astronautics](#); current Purdue graduate student Abigail Mizzi; and alumnus Jason Williamson. The graduate student was chosen by a faculty research committee; two other alumni joining the flight will be named at a later date.

The suborbital spaceflight was announced Tuesday (Sept. 23) in the Herman and Heddy Kurz Atrium at Purdue's Neil Armstrong Hall of Engineering.

"The Purdue 1 mission is designed to demonstrate what is possible in space," said Arvind Raman, the John A. Edwardson Dean of the College of Engineering. "With students, faculty and alumni all together, we are challenging the notion that a university is restricted to a geographical location on Earth. A university environment of research, learning and career success can also be continued beyond Earth to space, the next endless frontier."

Known as the [Cradle of Astronauts](#), Purdue has 30 alumni — 29 from Purdue Engineering — who have already flown in space or been selected as NASA astronaut candidates. Collicott, Mizzi and Williamson will be considered part of the Cradle of Astronauts following their Virgin Galactic flight. Mike Moses, Virgin Galactic's president of Spaceline, is also a Purdue graduate.

"We anticipate that this mission with Purdue University will be a powerful demonstration of what can be possible when research institutions and educators gain direct access to the microgravity environment," Moses said. "By enabling researchers to accompany and interact with their experiments in real time, we are not just advancing science — we are empowering the next generation of innovators and expanding the frontiers of educational opportunity. We expect



Purdue 1 to be a milestone for our Spaceline and for the broader research and education community, showing how suborbital spaceflight can transform both scientific inquiry and hands-on STEM education.”

Designed to seat up to six passengers, Virgin Galactic’s next-generation spaceship is customizable and will have one seat removed for this mission to fly the five crew members and allow space for a payload rack to hold the research experiments.

Collicott and Mizzi, an aeronautics and astronautics engineering graduate student from Bloomington, Illinois, is expected to fly with original research payloads during the suborbital flight. The 22-year-old graduate student’s project is an evolved version of an automated NASA experiment that Collicott flew on Virgin Galactic’s Galactic 07 mission in 2024.

“This is a culmination of the skills and knowledge that I learned in the past four years and now get to apply it in the unique and complex environment of space,” said Mizzi, who was selected for the flight during the summer. “This is exactly why I want to go to space, to gather real data and add to this body of knowledge that researchers, designers and engineers can use on future spacecraft and their engine designs.”

Her experiment focuses on the zero-gravity oscillations of liquids set in motion by rotation, such as the motion of rocket propellants sloshing in their tanks after a spacecraft rotates to dock at a space station. This type of flow affects spacecraft control system design and in-space operations planning.

Collicott said going up on the flight to tend to experiments in real time is similar to a researcher being in the field, noting that if a volcanologist goes to a volcano, a microgravity researcher should conduct research in microgravity conditions.

“This flight puts an experienced researcher up there with the experiment, putting the brain power up there,” Collicott said. “It’s not like I’m sitting with the experiment next to the crew and simply watching it. It’ll be a situation where observations and decisions need to be made to maximize the value and amount of data collected in the experiment. I expect to be there and be able to adjust and control the experiment hardware for the duration of the flight.”

An expert in fluid physics for almost 40 years, Collicott plans to use novel testing to gather data on the nonuniform effect of liquid spreading over a surface.

“If you spill water on your kitchen counter, you’ll see it spreads more some ways than others,” he said, noting many parameters, including the kind of liquid and the style of surface, come into play. “Is this drinking water in a space station or a liquid packed with nutrients for a plant growth system? We need to get this important data to learn more about these flows to aid in spaceflight hardware design for future long-duration missions and perhaps so that future payloads can be automated, which would make missions even less expensive.”



Collicott is already known for his high-flying experimental endeavors, having taught a zero-gravity flight experiment course for 30 years. As part of the course, Collicott and some of his students experience weightlessness while conducting experiments aboard a parabolic aircraft. But those flights only are able to achieve about 20 seconds of microgravity time, significantly less than what is experienced on a suborbital flight.

The Virgin Galactic flight is a dream in the making for Collicott, who was selected through a nationwide research proposal competition in December 2021 to receive an award from NASA's Flight Opportunities. The program will fund his chance to fly to suborbital space and back on a Virgin Galactic craft while conducting this zero-gravity experiment.

Mizzi's seat on the flight will be funded by donations being accepted by Purdue. The three remaining seats are expected to be filled by alumni passengers who will buy their seats on board Purdue 1.

One of those passengers is already selected. Williamson is senior vice president of the multidisciplinary design firm Dunaway. For him, the idea of journeying to space began in his childhood through building model rockets and attending Space Camp.

"This opportunity aboard Purdue 1 is proof that barriers are meant to be broken," said Williamson, who earned a degree in civil engineering at Purdue. "Virgin Galactic and Purdue are making space reachable and helping fulfill a lifelong dream of mine."

A second passenger seat has also been reserved by an alumna. Currently, the last passenger seat remains. Purdue alumni interested in being part of this historic mission as a passenger should contact Korina Wilbert, [kwilbert@purdue.edu](mailto:kwilbert@purdue.edu).

If you are interested in philanthropically supporting this historic mission for Purdue, please see more details at <https://engineering.purdue.edu/purdue1>.

### **About Virgin Galactic**

Virgin Galactic is an aerospace and space travel company, pioneering human-first spaceflight for private individuals and researchers with its advanced air and space vehicles. Scale and profitability are driven by next-generation vehicles capable of bringing humans to space at an unprecedented frequency with an industry-leading cost structure. You can find more information at <https://www.virgingalactic.com/>.

### **About Purdue University**

Purdue University is a public research university leading with excellence at scale. Ranked among top 10 public universities in the United States, Purdue discovers, disseminates and deploys knowledge with a quality and at a scale second to none. More than 107,000 students study at Purdue across multiple campuses, locations and modalities, including more than 58,000 at our main campus in West Lafayette and Indianapolis. Committed to affordability and accessibility,



Purdue's main campus has frozen tuition 14 years in a row. See how Purdue never stops in the persistent pursuit of the next giant leap — including its comprehensive urban expansion, the Mitch Daniels School of Business, Purdue Computes and the One Health initiative — at <https://www.purdue.edu/president/strategic-initiatives>.

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