

Exploring the Moon: Training Astronauts for Artemis Missions

Cynthia Evans, Kelsey Young, Trevor Graff, Juliane Gross, Jennifer Heldmann, Noah Petro, Jacob Richardson, Timothy Stubbs, Jacob Bleacher, Sarah Noble, Chelsea Trainor, Angela Garcia, Samantha Jacob.

For the first time in over 50 years, NASA scientists are training astronauts assigned to lunar missions. The successful Artemis 1 test flight in 2022 set the stage for future human missions to the Moon. The Artemis II mission will send astronauts to fly by the Moon, providing the first opportunity since Apollo for humans to directly observe and document the lunar surface from a few thousand kilometers, including the lunar far side. Artemis III will be the first human mission to land and explore the Moon's surface near the lunar South Pole.

To prepare for Artemis exploration, geology training for the Artemis II crew and detailed training plans for Artemis III and beyond are in full swing. NASA scientists have been working for several years with the Flight Operations Directorate (FOD) at the Johnson Space Center on a progressive geology training program that starts with incoming astronaut classes, offers opportunities to maintain the geology proficiency between flight assignments, and trains the broader engineering-operations-management community in geology and field operations. In the spring of 2023, our team developed an introductory week-long class called Lunar Fundamentals and delivered this content to the Artemis II crew, as well as key NASA Flight Control Team members. The Lunar Fundamentals curriculum combines basic geographic and geologic information about the Moon; includes detailed content on major geologic processes, the lunar environment, lunar volatiles, and sample science; provides historical context of our growing knowledge about the Moon; and introduces new lunar data sets and tools for exploring the lunar surface.

With the Lunar Fundamentals foundation, we continue development of the advanced planetary science classroom content for the Artemis III crew, together with field training science objectives and plans. Partnering with our FOD colleagues, we are building an integrated training plan for lunar science, exploration field methods, and operational skills to ensure that the Artemis astronauts exploring the Moon will have the necessary foundation in geology and lunar science to achieve mission success.