Mission Objective Summaries

MO-1: Documenting Your Mission

When NASA has a lot of people working on a complex project over a long period of time, how do they keep it all organized and honor everyone's efforts? Documentation! All team members will learn about the Artemis ROADS III Mission Objectives (MOs) and identify their individual funds of knowledge that will help them complete these objectives. Throughout the Challenge, each student will document their work in a Science & Engineering Notebook (SEN). Then, students will work in teams to select the evidence required for each MO to create one Mission Development Log (MDL) for the team.

MO-2: Building a Strong Project Team

A mission patch is an important symbol of any NASA mission, reflecting the team, the object of study, the spacecraft, the mission goals, or a combination! How will you represent your Artemis ROADS mission and crew with imagery?

MO-3: Investigating Water on the Earth and the Moon

All living things are possible because of Earth's giant "life support system." For this MO, teams will focus on one aspect of Earth's systems: water. They will create a placed-based water cycle model and use the water cycle as inspiration to design and test prototype water purification systems for astronauts on the Moon.

MO-4: Growing Food on the Moon

For short-term missions, NASA sends astronauts to space with all of the food that they will need. As missions get longer, it will become more difficult and costly to send all of the food they will need. In this MO, teams will consider the resources (inputs) that will be required for astronauts to create an agriculture plan and grow their own food (output) on the Moon.

MO-5: ROV-ing Under the Moon

Humans aren't the only ones who will be working on the moon--robotic rovers will be there working alongside human crews. In this MO, teams will design a lunar lava tube explorer that can autonomously navigate a lunar tunnel and take measurements along the way.

MO-6: Designing Human Rated Rocket

Rocket science gets real when NASA crews are on board. In this MO, teams will design a rocket and a crew capsule that is safe and reliable enough to deliver their astronauts to the Moon and then safely return them home.

MO-7: Envisioning Your Role

Teamwork makes the dream work, and this is especially true at NASA. While astronauts get a lot of attention, it takes hundreds of other roles all working together to complete a successful NASA Mission. In this MO, each team member will tell us about their dream role at NASA.

MO-8: Reflecting on and Presenting Your Mission

What went great, and what could have been better? Reflect on your work and summarize it in your MDL. While all teams will submit their final MDL electronically, there are two options for completing this MO:

MO-8a: For Teams Attending an In Person Expo

IT'S GO TIME! Your team has modeled and tested its mission, and now it's time to launch. Teams who attend an in-person Final Challenge Event will complete MO-5 and MO-6 on the Final Challenge Course and present a tri-fold board on another MO of their choice.

MO-8b: For Teams NOT Attending an In Person Expo

Teams who cannot attend a Final Challenge Event will complete their final mission on their own printed or homemade courses and submit their MDL and short videos of MO-5 and MO-6.