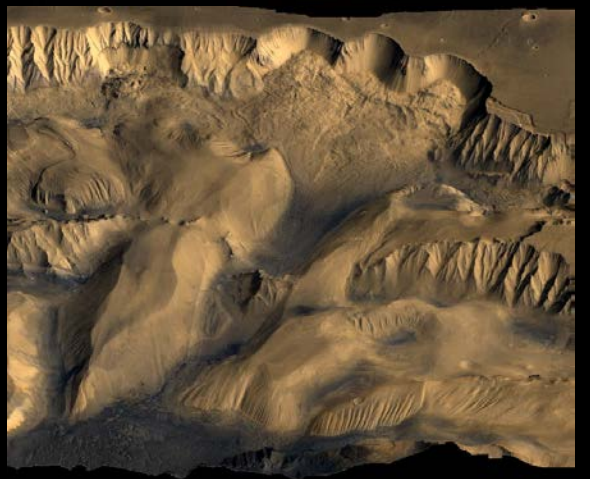
EXPEDITION MARS™



The year is 2076. Humans have solved some of the larger problems associated with a long term Mars mission, including radiation exposure and landing large payloads safely on the surface. A handful of facilities have been established on the Martian surface including a Greenhouse, a mobile geo survey base, and a centralized research habitat. The primary human habitat within the Mars system is not on Mars itself, but located approximately 9376 km away on its moon, Phobos. This tiny moon provides an excellent location for a permanent base to continue studying Mars.

A large shuttle regularly ferries astronauts and scientists between the base on Phobos and the surface of Mars. This shuttle, or Mars Transport Vehicle (MTV), serves as the spacecraft for the mission. The MTV carries parts to build a ROV for hydrological exploration and it also carries one unmanned drone aircraft which can carry the ROV to a survey destination. However, when crew members discover a threat to their MTV base, they must act quickly to save their crew and their station.

The two groups will have to work together to accomplish their mission goals: to search for evidence of life on Mars, whether fossil or living, to search for evidence of water, and to keep everyone safe. Using teamwork and creative problem solving, the crew will be able to continue their research on our neighbor planet.

MISSION TEAMS

One member of each team will be in Mission Control for the first half of the mission while the other is assigned to the Mars Transport Vehicle (MTV). Half way through Expedition Mars, the group in Mission Control launches to the MTV and the MTV group returns to work in Mission Control.

COMMUNICATION (COM)
Provide communications support between astronauts and Mission Control; Manage the distribution of assignments during an event and during some emergencies; Discover and reprogram missing communication satellites.

NAVIGATION (NAV)
Calculate and plot the course for the Spacecraft to reach and navigate to Mars from Phobos; Perform critical pre-flight checks to ensure the MTV is ready to fly.

BIOLOGY (BIO)
Test soil to determine if microbes are present; Check the Spacecraft for signs of beneficial or harmful bacteria.

ROBOTICS (BOT)
Examine Martian rocks using robotic arms; Execute basic programs for unmanned rovers to gather their payloads.

GEOLOGY (GEO)
Examine different Martian rocks for key elements and minerals; Research and map possible dig sites in search of important minerals.

LIFE SUPPORT (LS)
Work hand in hand with peers to ensure safe conditions for all team members on the Spacecraft; Manage life support emergencies as they emerge.

MEDICAL (MED)
Monitor the health of the crew with a focus on radiation; Run various diagnostics on different team members' blood pressure, radiation levels, and heart rate.

ROVER (ROV)
Build and test a remotely operated vehicle (R.O.V.) to search Mars for signs of water; Install critical equipment and components and retrieve data.

WEATHER (WEATHER)
Locate a missing satellite and track other objects in the Martian sky; Track and observe dust storms on the Mars surface.

Expedition Mars brings science to life, giving students the exciting opportunity to apply what they learn in the classroom to a real life scenario in our state-of-the-art simulated learning environment.

Before the mission begins, educators have access to a teacher guide developed to give students an understanding of topics covered in the mission. Lesson plans and activities are outlined to correspond with five key areas of Mars – How Mars Compares to Earth, the Biology of Mars, Transporting to and from Mars, the Geology of Mars and Evidence of Water, and Humans on Mars.

Through both project and problem-based learning, students taking part in the mission have to complete tasks to ensure success. At the same time, they may encounter emergencies or unexpected problems that require critical thinking and decision-making skills to find resolutions. Each student plays a part in the mission, interacts with at least one physical hands-on lab, and is responsible for finishing several tasks. Teamwork is crucial because if one member of the class fails to complete his or her job, the entire mission may be at risk.

Aligning with Common Core and Next Generation Science Standards and containing up-to-date, accurate educational content, Challenger Center missions can be customized to allow for adaptations based on the needs of students. In addition, Challenger Center digital mission and data logs now provide teachers with a level of assessment for post mission review and to help continue the experience in the classroom. Teachers can walk away with a digital copy of the of student activity during the mission to gain a better understanding of strengths and weakness of their class.