Program: Expedition Mars
Grade Level: 5 to 12
Group Size: Max. 34
Length: 2 hours
Location: The Museum of Flight

OVERVIEW

In 2076, a handful of facilities have been established on Mars, including a greenhouse, a mobile geological survey base, and a centralized research habitat. The primary human habitat is not on Mars, but on one of its moons, Phobos. 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), carries parts to build a remotely operated vehicle (ROV) to continue the search for the evidence of life and water. However, when crew members discover an imminent threat to their MTV and the Martian surface facilities, they must act quickly to save their stations, their research, and their lives.

BIG IDEAS

• Research
• Teamwork
• Communication

• Challenges of space travel
• Mars facts

OUTCOMES – What will the students know or be able to do at the end of the lesson?

• STEM engagement, self-efficacy and Career Awareness
• Understand the challenges of space travel
• Understand the environment and geology of Mars

• 21st Century Skills: Communication, collaboration, and problem solving skills effectively as a member of a team

MAJOR STEM CONCEPTS

• Finding water is a precursor for finding life
• Collision of objects in space can cause geological changes
• Without the earth’s protective atmosphere, radiation levels are higher
• Advanced programming of robots aid in science exploration
Extended Learning

At the Museum:
- **Apollo**: come and check one of the F-1 engine from Apollo 12, a Lunar Rover and our Apollo training capsule. Don’t forget to have a glance at our Viking Lander!
- **NASA Full Fuselage Trainer**: a full-scale mockup of the Space Shuttle used for astronaut training simulations

**Standards Supported** – NGSS/CCSS/21st Century Skills

**Next Generation Science Standards (NGSS)**
- Physical Science: MS-PS1-2, MS-PS2-2, MS-PS3-3, MS-PS4-2,
- Engineering, Technology and Application of Science: MS-ETS1-1, MS-ETS1-2, MS-ETS1-3
- Life Science: MS-LS1-5, MS-LS1-1, MS-LS1-2, MS-LS1-3, MS-LS1-3
- Earth and Space Sciences: MS-ESS2-5

**Common Core State Standards (CCSS)**
- **ELA: Literacy: Science & Technical Subjects**:
  - Key Ideas and Details: CCSS.ELA-Literacy.RST.6-8.1, CCSS.ELA-Literacy.RST.6-8.2, CCSS.ELA-Literacy.RST.6-8.3
  - Integration of knowledge ideas: CCSS.ELA-Literacy.RST.6-8.7, CCSS.ELA-Literacy.RST.6-8.9
- **ELA: Speaking and Listening**:
  - Presentation of knowledge and Ideas: CCSS.ELA-Literacy.SL.8.5
- **ELA: Writing**:
  - Text types and Purposes: CCSS.ELA-Literacy.WHST.6-8.1
  - Research to build and present knowledge: CCSS.ELA-Literacy.WHST.6-8.7, CCSS.ELA-Literacy.WHST.6-8.9
- **Math**: Reason abstractly and quantitatively: CCSS.Math.Practice.MP2

**21st Century Skills**
- Critical Thinking and Problem Solving
- Communication and Collaboration
- Flexibility and Adaptability
- Initiative and Self-direction
- Productivity and Responsibility
- Information literacy
- ICT literacy
- Social and Cross-cultural Skills
- Productivity and Accountability

**Reservations**

For reservations, please call 206-768-7190 or email: Educationreservations@museumofflight.org
For grant assistance, please visit http://www.museumofflight.org/Education/Educator-Resources/grant-assistance