Note: Lesson mostly from [here](https://education.lego.com/en-us/lessons/wedo-2-science/space-exploration)

# Introduction

Intro video: [Driving on the Surface of Mars](https://www.youtube.com/watch?v=nQ365jzwk5w)

## Discussion

Can humans explore Mars? not yet.

What is there to learn about Mars:

* Geology
* Geography
* Weather.
* Atmosphere
* History
* Is there life on Mars? Was there life before?
* Can Mars sustain life? Can humans live there? What would it take for humans to live there?

What do we need to learn more about Mars? Robots! Rovers. Eventually humans!

**What is a rover?**

A rover is an automated motor vehicle that propels itself across the surface of a celestial body. A rover may examine territory and interesting features, analyze weather conditions, or even test materials, such as soil and water.Let students explore rovers and discover their many interesting features and functions. Students should design various functions for their rover

# Open Project: Explore Mars

Students design, build, and test a rover that can achieve one of the following missions when sent to another planet

1. Move in and out of a crater.
2. Collect a rock sample.
3. Drill a hole in the ground.
4. Detect objects around it.
5. Another goal of their choosing.

Let students explore the Design Library so they can choose a model for inspiration. Then allow them to experiment and create their own solutions, modifying any basic model as they see fit.

Suggested Design Library models are:

1. Drive
2. Grab
3. Sweep

Discussion:

What may limit the functionality of our Robots? Hint: how many actuators are in your kit?

# Share

Students should present their models, explaining how they have designed and tested their rover to complete a series of planet exploration-based tasks. Have students compare models and provide feedback to each other on how well the models fit the constraints and meet the criteria of the given problem.

# Assessment

Ensure that students explain why each function is important and how they have allowed for the rover to move over fluctuating terrain to complete the assigned/chosen tas