

# Lesson 20: ET in the Universe

## Summary

This learning module and related in-class activity is meant to expose students to the SETI program.

## Learning Goals

### Students will be able to:

- Explain SETI protocols and their ethical implications

## Context for Use

This module is to be utilized at the end of a full-term of Mars-related topics in conjunction with Earth science processes. Given its unique topic, however, this activity can be adapted for any course at any time.

## Description and Teaching Materials

### *In-Class Activity*

In-Class Activity 1: *Calling Earth*

## Teaching Notes and Tips

- The *In-class Activity* can be easily modified to be used as a homework assignment.

## Assessment

Each *In-Class Activity* and *Homework* has its own measure of Assessment.

## Mars for Earthlings

### References and Resources

1. SETI protocols: <http://www.seti.org/post-detection.html>



## Mars for Earthlings

### ***In-Class Activity 1***

ET in the Universe\_MFE

*Calling Earth*

**Purpose:** Learn the mission of SETI (Search for Extraterrestrial Intelligence) and their protocols.

### **Engage**

Have students begin to think about what they would do if they made contact with extraterrestrial life

### **Explore**

The student is an astrophysicist, if he or she hears what he or she thinks to be communication from outside the solar system, what protocol would he or she follow to make a conclusive determination? Come up with at least 5 steps.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

### **Explain**

- SETI protocols: <http://www.seti.org/post-detection.html>

### **Elaborate**

1. After students have determined a conclusive ET signal, what steps would they take to inform the world (list them in order of what they would do first)?
2. Have the students compare their above steps to what SETI has published as their protocol (<http://www.seti.org/post-detection.html>) for ET detection. How do they differ?
3. What ethical implications are involved if such an occurrence were to happen?

An additional activity could involve having students look up protocols for sample return missions from Mars. Should we worry about contaminating Earth with samples from Mars? How should scientists handle this issue and what precautions should be followed?

### **Evaluate**

What are the steps designated by SETI to take in the case of receiving an ET signal?

