

# LETTER FOR FOSS MIDDLE SCHOOL COURSES

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**Hello Students, Teachers, and Families,**

To facilitate science teaching and learning during school closures, the FOSS team has provided additional Home/School Connections on the FOSS website <https://www.fossweb.com>. Students and families gain access to resources on FOSSweb through the class pages set up by the teacher. The teachers can leave notes on the class pages for students. Students can read those notes with assignment instructions from the teacher when they sign in to FOSSweb. Note that teachers may, instead, send FOSSweb assignments to students through other established parent communication apps or emails.

The new Home/School Connections for each course are active investigations that can be conducted at home (inside or outdoors), online readings, or online multimedia experiences including research. Most of these activities are part of the existing course that the students are learning, now formatted for students to access at home.

The teacher will decide which of the suggested activities are appropriate for students based on the classroom science experiences students have had through the year. Please refer to the teacher's communications home for specific expectations for assignments. The teacher may assign *FOSS Science Resources* readings, videos, and multimedia from investigations in the module or course.

**For Students and Families:** To sign in to FOSSweb, use the student user name and password provided by your teacher. Here's a short video to get you started on FOSSweb.

**For Student Sign in Video:** <https://youtu.be/Fcfjbt7Li2k>

**For FOSSweb help:** <https://www.fossweb.com/student-parent-help>

Preview the **Course Summary** from the Student Page. The **Module Overview** is available to download as a PDF. The first few pages of the Overview will help to set the context for the Home/School Connections.

**For Teachers:** For help in setting up and using Class Pages, use the Walk-through Videos on FOSSweb: <https://www.fossweb.com/fossweb-walkthrough-videos>

Visit the Home/School Connection for each module or course you teach, select the specific assignments that will be most relevant to your students at this point in instruction. Communicate with families about which content you are assigning through the Class Pages Notes on FOSSweb or through any other established parent communication channel your school has in place.

**Tech support on FOSSweb:** <https://www.fossweb.com/contact-us#jotform>

Together we will continue to make progress in science teaching and learning during school closures. Now, more than ever, we appreciate the role that science plays in our lives, and how important it is for citizens of all ages to understand and act based on scientific evidence

Sincerely, The FOSS Team at the Lawrence Hall of Science

## FOSS Planetary Science, Home/School Connections, Families version COVID-19 School Closure Instructional Opportunities—March 18, 2020

NOTE: For all online research projects, we suggest that students use our [Internet Disclaimer](#) to help guide their independent evaluation of digital sources.

### Keep a Moon Log at Home

Students who began recording a Moon log in class before school was closed should continue their log at home for the duration of the closure. Students who had not yet started the Moon log can begin right away.

➤ *How does the Moon change day by day?*

Have students record their predictions. Have them leave enough blank spaces in their notebooks to record additional observations, descriptions, and predictions over time. Students should record their observations of the Moon each day on the Moon log notebook sheets. If closures are extended, they can observe an additional month to confirm the pattern.

### Astroblog

Astronomy is a rapidly evolving field of science, as researchers and space agencies continually explore the cosmos and gather new data. The online resource, "[Astroblog](#)," archives news articles that are relevant to this course. Check the blog for recent updates that could be interesting to introduce to students at this time to pique their curiosity in modern astronomy, such as a recent or impending space mission launch or finding.

**Watch Powers of Ten video:** "[Powers of Ten](#)" is a short presentation that provides a visual odyssey from the minute to the cosmic.

### Examine maps in everyday use

Ask students to find a map in a newspaper, a magazine, an advertising brochure, and so on. They should bring their maps to school with answers to these questions.

- On what point of view is the map based? What is the frame of reference?
- About how much area is covered by the map?
- For what purpose was this map made?

### Study cycles on Earth

Students can research how cycles of earth materials, such as the water cycle or carbon cycle, relate to Earth's systems. How do they show interactions of Earth's systems?

### Measure a shadow

If students put a 1 m pole straight up and down in the ground and measure the shadow at local noon, they can compare the length of the shadow to the lengths of shadows cast by other 1 m poles at different locations on Earth. The “[Shadow Data](#)” program allows you to determine the length of the shadow cast by a 1 m pole anywhere on Earth.

Students must control variables in order to collect data suitable for comparison.

- The length of the pole must be controlled. We recommend a standard pole of 1 m.
- The pole must be absolutely vertical. If the pole is a meter stick hanging (perhaps from a tripod) so that it just brushes the ground, it will be vertical.
- The shadow must be measured at local noon. Local noon is the moment when the Sun passes its highest point overhead, separating morning from afternoon. In other words, it is halfway between sunrise and sunset. That is not necessarily 12:00 noon.

Visit [Sunrise and Sunset Times \(U.S. Naval Observatory\)](#) to find the sunrise/sunset times for your location. Halfway between sunrise and sunset is your local noon.

### Research time zones

Challenge students to explain time zones, based on what they know about Earth’s rotation and the fact that it’s always half in light and half in dark. Students can use Internet resources [Time zones](#) to research the history and use of time zones.

### Investigate seasons in the Southern Hemisphere

Students can use Internet resources to research what seasons are called in the Southern Hemisphere.

### Learn more about NASA DART mission

Students can learn more about the NASA DART mission’s attempt to test the kinetic impact method of asteroid deflection by watching a [short video](#).

### Scale craters to a local map

Have students make scale representations of lunar craters and maria and place them on a map of your county or state. (Some of the larger craters are 70–100 km in diameter, so a city map probably won’t be useful.) It will be easier for students to do their calculations if their maps have a metric scale (kilometers). If the scale is in English units, students will have to convert. The conversion equation is  $\text{miles} \times 1.6 \text{ kilometers/mile} = \text{kilometers}$ .

General guidelines for representing the craters:

- a. Select a local or state map and a crater to work with.
- b. Determine the scale of the map in metric units.
- c. Scale the crater to the map.

d. Outline the crater on paper (using a pencil compass), and draw in some details to make an accurate representation.

e. Cut out the representation, label it with the crater name and the scale factor, and place it on the map.

Ask students to think about the destructive force suggested by the crater pictures on the maps and to speculate what would happen if an object really did hit Earth with enough force to create a crater of that size.

### **View “Earth Craters”**

The “[Earth Craters Gallery](#)” provides additional views of craters on Earth that students can explore. Even more images of craters throughout the solar system can be accessed by visiting the “[Craters](#)” binder on FOSSweb.

### **Research careers**

Have students research science and engineering careers related to the content in this course, using the [Science and Engineering Careers Database](#) on FOSSweb. The database includes information about various careers and features diverse scientists.

### **Research per capita consumption**

Remind students that consumption of resources is not equal between countries and regions of the world. Students can research per capita consumption for the United States compared with other countries they choose, for resources such as gasoline, water, plastic, and aluminum.

### **Photo challenges**

Students can take photos to answer one of the challenges below and create their own website, social media collection, or share the files with their teacher/classmates.

- Shadows Photo Challenge

How does your shadow change throughout the day and throughout the year?

Take a picture of your shadow at different times of the day.

- Sunrise / Sunset Photo Challenge

What does sunrise or sunset look like on the horizon where you live?

Take a picture at sunrise or sunset.

- Moon Photos Photo Challenge

Throughout history, humans have observed and admired the Moon.

Take a picture of the Moon. Be sure to tag your photo with the hour you took your photo.