LETTER FOR FOSS MIDDLE SCHOOL COURSES

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 Connetion 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 Diversity of Life, 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.

Course Project A: Coronavirus research project

In the FOSS Diversity of Life course, students study "What is life?" and are asked in Investigation 9 to analyze characteristics of viruses and think about whether viruses are living. The coronavirus connects directly to this course of study.

FOSS developers are organizing resources that can support students in learning about coronavirus, and will publish those in an upcoming Home/School Connection. For now, here are some research questions that students can explore. Students can create a poster or digital presentation of what they have learned.

Research questions:

- What is a novel virus?
- How did the new coronavirus (2019-nCoV, which causes COVID-19) start infecting humans?
- Why is exponential growth a problem during an outbreak?
- How are vaccines developed?
- How does the coronavirus pandemic compare (so far) to the 1918 Spanish flu pandemic?

Note to teachers, parents, and students: If you come across coronavirus resources that are age-appropriate for elementary or middle school students, and you want to share them with the FOSS developers so we can share them with other educators in our next Home/School Connection update, you can send them to jpenchos@berkeley.edu

Other at-home opportunities

- **Make a water-drop microscope:** Students can make a water-drop microscope by putting a single drop of water on a clear plastic surface, such as a transparency or clear plastic packaging. They can explore how to view objects using this kind of "microscope" and figure out how to focus. They can draw several items from under this view that they can find around their home.

- **Research extremophiles:** Students can research extremophiles and the extreme environments where they live. Encyclopedia of Life is a good place to start. Students can present their findings on paper or digitally.

- **Research interesting fungi:** Have students find out more about a fungus that is interesting to them for any reason. They can present their findings on paper or digitally.

- **Research honeybees:** Start off with a fascinating 16-minute talk by entomologist Marla Spivak of the University of Minnesota. Her talk addresses why bees are disappearing but ends on a hopeful note, encouraging listeners to plant bee-friendly flowers and stop using pesticides. Then students can research this consummate pollinator and the honeybees' intriguing social community. They can also research the various stresses that are affecting honeybees.

- **Find or plant bee-friendly flowers:** Students can research native plants of their area and plant flowers that attract bees. Students can then search for these species in their yards or neighborhoods, and consider ways to support their growth, including planting more where possible.

- **Research Rosalind Franklin:** Dr. Franklin (1920–1958) was a pioneer molecular biologist. Her research was instrumental to the understanding of the structure of DNA. Have students find out about her short life and her contributions to the field of genetics.

- **Research genetic disease**: Have students research a disease or condition they are aware of that has a genetic component. Students should find out how the disease is inherited. Some possible research topics are Down syndrome, Huntington's disease, and sickle cell anemia.

- **Research dog breeding:** Have students research the pedigree of a breed of dog.

- **Research endangered insect species:** Insects are important parts of almost all ecosystems. Students can explore what is happening to the diversity of insects around the world.

- **Local Bioblitz:** Students can conduct a local bioblitz in their own backyard! They can access the instructions through the FOSSweb multimedia link "EX: Local Bioblitz" and write up a report of their findings, along with detailed observations and illustrations of the organisms they discovered.

- **Survey local plants:** Students can collect and sort leaf samples to answer this question.
  • *How many different kinds of plants grow in your study site?*
  You will need a large zip bag space to organize your collection.

a. **Identify a study area.** It could be your backyard or a small green area near your house. Predict how many different kinds of plants will be found.
b. **Collect samples.** Try to collect only one leaf or sprig sample from each different kind of plant in the site.
c. **Sort collection.** After 10 minutes of collecting, organize leaf samples by making a pile for each kind of plant (so put samples you think are from the same plant together).
d. Revisit the study question by counting how many different kinds of plants were collected.
e. Answer the following questions about your study site:
• Which plants are most abundant?
• Which plants are rare?
• Which plants are most important to this ecosystem? Why?

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.

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.

- Seeds Photo Challenge
  Seeds are everywhere. Take a picture of some seeds in the environment.
  Take a picture of some seeds people eat. Take a picture of how seeds are dispersed.
- Leaves Photo Challenge
  How many different shapes, sizes, colors, and textures of leaves can you find?
  Take a picture of different leaves in your local environment.
  Take a picture of leaves at different stages of development.
- Flowers Photo Challenge
  How many different flowers can you find?
  Take a picture of the smallest flower, the largest flower, the flower with the most petals, or the most unusual flower you can find.
- Critters! Photo Challenge
  What type of small animals can you find in your local environment?
  Take pictures of insects, spiders, snails, bees, or worms that show where they live.
- Scientific Illustrations Photo Challenge
  Naturalists have recorded the diversity of life by making scientific illustrations.
  Take a picture of your scientific illustrations and share them with your teacher.