



Phone: 206-543-1943
Toll-Free: 800-659-1943
Email: nwessp@uw.edu
Web: www.nwessp.org

University of Washington
141 Johnson
Box 351310
Seattle, Washington 98195-1310

August 2020 NESSP Two-Day Teacher Workshop

Professional Development for Hands-on Virtual NASA STEM Projects for Middle and High School Teachers

When: September 25–26, 2020

3:45–8 p.m.; 8:30 a.m. – 3 p.m. (PDT)

Register: nwessp.org/programs/pd

Where: Virtual (details to registered participants only)

Register by: **September 11** (to receive free supplies*)

STEM clock hours: Available for ID, MT, OR, WA

The Northwest Earth and Space Sciences Pipeline (NESSP) is offering this free, two-day workshop for middle and high school teachers interested in learning more about a curriculum pilot project. The curriculum, designed as a companion course for NESSP's next ROADS challenge, is aligned to NGSS, CCSS Math, CCSS English, and 21st Century Skills standards and follows the processes for a NASA mission. Educators can select a subset of the curriculum's activities to supplement an existing course, or students can form teams to attempt the next national NASA/NESSP student challenge and thereby undertake the curriculum's full set of activities.

The upcoming challenge, **ROADS on Asteroids**, will launch October 2020 and conclude April 2021, but the activities and lessons can be completed any time. Information on the challenge will be available on [NESSP's website](http://nwessp.org) in September.

Learning objectives involve geology, environmental sciences/remote sensing, astrobiology, engineering design, programming, and documenting experimental procedures. No experience is needed; [additional lesson plans are available on our website](http://nwessp.org) to assist programs moving forward. Supplies for the workshop (including a robot, mini-drone, methane detector, CO2 detector, and 5 Foldscope microscopes) will be provided at no cost to participants if they register by the deadline. Additional equipment support is possible for teachers using the material for class efforts.

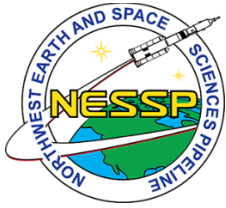
* Supplies

NESSP is able to provide, at no cost to participants, the STEM supplies that will be used in the workshop. To receive your free supplies in time, you must register by **Friday, September 11, 2020**. Supplies can be kept for course implementation or to support a team in the upcoming ROADS on Asteroids challenge.

Supplies available include:

- Methane detector
- Carbon dioxide detector
- Microscope (option of one of the below)
 - [Foldscope](http://nwessp.org) (pack of 20)
 - Digital microscope (1)
- Mini-drone
- [Makeblock mBot Ranger](http://nwessp.org) (If you have a LEGO Mindstorms robot you are welcome to use that — the workshop is designed to accommodate both systems.)

Class supply support is also possible for schools with greater than 50% free and reduced lunch (dependent on availability of funding).



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NORTHWEST EARTH AND SPACE SCIENCES PIPELINE

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Day 1: The Mission, the Mission Development Log, and Planetary Sciences (All times are in Pacific Time)

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|--|--|
| 3:45 Virtual sign in (required for clock hours) | 6:00 Dinner |
| 4:00 Introductions; NESSP staff | 6:30 Search of signs for life (carbon dioxide) |
| 4:15 Overview of the mission | 7:00 Operation of your own microscope (Foldscope or digital microscope) |
| 5:00 Mission Development Log | 7:30 End day 1 |
| 5:15 Break | |
| 5:30 Search for signs of life (methane) and carbon dioxide) | |

Homework — Household scavenger hunt

Hardware:

- Digital cooking scale
- Measuring cup with mL divisions
- Tall glass vase or glass (the wider the glass the more ingredients needed)
- Flat plastic tub

Ingredients:

- Corn syrup
- Dish soap
- Food dye
- Vegetable oil
- Water
- Rubbing alcohol
- Flour
- Instant hot cocoa powder
- Rocks (different types and sizes)



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Day 2: Engineering Design and Programming

(All times are in Pacific Time)

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|---|--|
| 8:15 Virtual sign in (required for clock hours) | <ul style="list-style-type: none">• Connecting your robot• Basic Commands |
| 8:30 Geology with multi-lingual component: Rocks, cratering, and hillslope (using household items) | 12:00 Lunch |
| 9:15 Break | 1:00 Programming (<i>continued</i>)
The Use of sensors <ul style="list-style-type: none">○ Loop command○ Conditional statements○ Ultrasonic sensor |
| 9:30 Drone Basics | |
| 10:30 Break | |
| 10:45 Programming for middle and high school students (separate break out rooms for LEGO Mindstorms or MakeBot Mbot Ranger): | 3:00 <u>COMPLETE SURVEY FORM</u> (<i>Click to go to the survey; This is required to receive clock hours.</i>) |

Additional Robotic Programming Workshop Available on Demand

Links

- NESSP — <https://www.nwessp.org/>
- Our programs — <https://www.nwessp.org/programs/>
 - Supply lending — <https://nwessp.org/programs/pages/supplies/>
 - Student challenges — <https://nwessp.org/programs/pages/challenges/>
- ROADS on Asteroids
 - Challenge — <https://www.nwessp.org/asteroids/>
 - Companion course curriculum — <https://www.nwessp.org/programs/pages/curriculum>