



**Science Olympiad
2021 National Tournament
Detector Building Updated Information
Updated 5/14/2021**

- This will be a combined test through Scilympiad and a self-scheduled video submission Trial Event not counting towards overall team standing.
- All logs, materials, and videos must be uploaded by 11:59 PM PDT/MST on May 19th using the link provided in Scilympiad.
- All documents, images, and videos as outlined below should be placed into a Google Folder with link sharing enabled.
- Please submit a complete copy of your logs using the form above. The log must include;
 - A top view of your device with all components labeled and purpose given.
 - A detailed description of the probe construction with pictures and listing all components.
 - A minimum of 10 raw calibration data points of voltage and corresponding temperatures in a data table.
 - A scatter graph showing temperature on the Y axis and voltage on the X axis
 - A mathematical model superimposed on the data with the modeling equation shown
 - A copy of the device program with the above derived equation being used by the program.
 - The LEDs code included in the program should reflect the following action values:
 - Red LED on for Temperatures 45.0 degrees Celsius or greater.
 - Green LED on for temperatures between 20.0 and 44.99 degrees Celsius.
 - Blue LED on for temperatures 19.99 or less Celsius.
- Both participants do not need to be physically together to compete in the event; though the participant who will be testing the device needs to have an adult present.
- The participant, whoever is preparing the water baths and whoever is videoing should each read all the instructions in advance of device testing. They should discuss staging and camera angles so that everything is available for the videographer to document.
- Prior to testing participants should prepare 4 water baths of the following temperatures:
 - 45.0 degrees Celsius or greater;
 - 20.0 and 44.99 degrees Celsius; and,
 - 19.99 or less Celsius; if ice is used it may be present.

- The adult supervisor should prepare 4 water baths that reflect the temperature values emailed to the team’s Head Coach on Friday, May 14th. All Division C Teams at the National Tournament are being emailed the same instructions.
- The video should follow these guidelines:
 - The maximum time for all 4 trials needs to be under 1 hour
 - Briefly show the parent or guardian who is providing adult supervision.
 - Show that the computer is not plugged into the wall.
 - Show the device does not draw power from a wall outlet.
 - Document the colors of the LEDs by showing the following action values:
 - Red LED on for Temperatures 45.0 degrees Celsius or greater.
 - Green LED on for temperatures between 20.0 and 44.99 degrees Celsius.
 - Blue LED on for temperatures 19.99 or less Celsius.
 - The calibration thermometer should NOT be visible to the participants until after they announce their reading. Failure to show this is the case will result in the points for that station not counting towards the final score. One solution to this is to cover the readout of the calibration thermometer with a piece of paper until after the competitors announce their readings.
 - On camera, the adult should share with the participants the actions that their device now needs perform. This information was sent to the team’s Head Coach on Friday, May 14, 2021. The participants now have 10-minutes to adjust their device’s program. The device and any, and all interfaces, need to remain visible on the video during this 10-minute period.
 - This period ends when 10 minutes have elapsed, or the participants begin testing of the first bath.
 - The device should now be tested using the 4 water baths prepared by the adult present. The calibration thermometer should NOT be visible to the participants until after they announce their reading. Failure to show this is the case will result in the points for that station not counting towards the final score. One solution to this is to cover the readout of the calibration thermometer with a piece of paper until after the competitors announce their readings.
 - At each bath the Participant should announce clearly and loudly “Mark these readings”. Then loudly and clearly announce the device reading. While tis is occurring, the videographer should capture:
 - The calibration thermometer reading
 - The device reading.
 - The LED’s color announcing the color that is lit.
 - The videographer should announce loudly and clearly the reading from the calibration thermometer. Note to videographer: Ideally the competitor cannot see the calibration thermometer reading until they announce “Mark these readings” I understand this is not always possible, but do your best to simulate this part of the in-person experience for your competitor.
- The test portion of the event will take place on Saturday, May 22nd at 11:30 AM PDT/MST