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## Sensors Are Essential Module

In our daily lives, we regularly engage with information provided to us by a wide range of sensors. In fact, our body has a really robust sensing system that keeps it functioning normally and allows us to respond to changes in our external environment. STEM professionals have created new digital sensors that mimic and even improve upon the sensors found in living things. Lights are activated in our cars to tell us that we are low on gas, our watches monitor our heart rates, smoke detectors sound the alarm, a motion sensor turns on our lights for us and our ovens beep letting us know we've reached the perfect temperature for baking cookies. The quality of our lives is greatly enhanced because we can "know" what is going on around us. Knowing allows us to make better decisions about what next steps to take.

In the Sensors Are Essential Module, you will be introduced and begin to explore the amazing world of digital sensors using an Arduino System. You'll learn about: electronic components, interpreting circuits & schematics, basic programming syntax, microcontrollers, and data collection/analysis. After completing all the activities in this module, students will be challenged to create and program a digital temperature sensor that will alert someone in their community when the temperature gets too hot or too cold. *This module is designed to launch students on a pathway towards earning an Arduino Certification as well as support career pathways in Advanced Manufacturing.*

**Time Requirements:** approximately 4 weeks

**Audience:** Pre-Engineering, Manufacturing, Engineering Design, Robotics, 9-12th grade courses: science, math, (This module could easily be modified for younger students.)

### Opportunities for local businesses and organizations to be featured in the module:

- **Imagery:** We would include images of sensors in action in your company.
- **Media:** We welcome short video clips that might show aspects of your production area.
- **STEM Role Models:** Let us know if you have someone who you think might be featured in our STEM Champion Video for Sensors are Essential. We'll take care of the details, you bring the excitement and expertise.
- **Site Visits:** Let us know if you might be open to having educators tour your facility.