



## SCIENCE KIT PHYSICS LAB

Enable middle school students to think and act like real scientists.

Science teachers who want to bring an inquiry-based, hands-on approach to their middle school classrooms can enable their students to think and act like real scientists with Science Kit Physics Lab. Developed in partnership with Google, the kit and nine exciting projects challenge students to explore and explain the physics behind amusement park rides, make their own hypotheses, check their assumptions and log data.

**NUMBER OF STUDENTS PER KIT:** Optimal for 2 students per kit

**NUMBER OF LESSONS / PROJECTS:** 9 projects (1 project equals 2 x 45 minute lessons)

**LANGUAGES:** English, German, Italian, Spanish, Portugese, Hungarian

**TARGET:** 11 - 14 years (Middle School)

For more info visit: [store.arduino.cc/physics-lab](https://store.arduino.cc/physics-lab)

Developed in partnership with



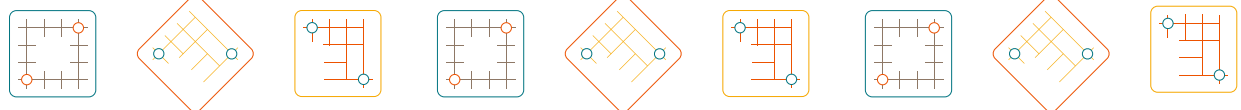
"The Arduino Science Kit Physics Lab is a one stop shop for all the experiments that you can do. Covering magnetism and motion, combined into one box making it really accessible for students. They can just pick it and get going."

*Graeme Wood, Physics Teacher*



### WHAT IS THE SCIENCE KIT PHYSICS LAB?

Science Kit Physics Lab includes all the hardware and software needed to assemble and conduct **nine fun physics experiments** based on favorite amusement park rides, covering electromagnetism, thermodynamics, kinetics, and kinematics. The kit includes a range of sensors to measure light, temperature, motion, and magnetic fields, along with a set of props and access to online course content for both teachers and students. You'll just need to provide a few classroom supplies (pencils, rulers, etc.) and a LiPo battery. No prior electronics knowledge is necessary - just plug and play! We recommend two students per kit.



## KEY LEARNING VALUES

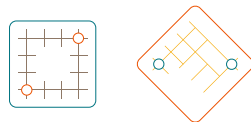
- Present experimental data in tables and charts.
- Evaluate a scientific hypothesis.
- Explore possible variables to design an open-ended investigation.
- Distinguish between a conductor and an insulator, and measure resistance and conductivity of different materials.
- Represent magnetic fields through sound.
- Investigate the effect of materials between a magnet and the magnetometer on the strength of magnetic field.
- Compare the thermal conductivity of different materials.
- Identify materials that are thermal conductors or thermal insulators based on experimental observations.
- Describe the motion of a pendulum, measure its period and frequency, monitor its acceleration, and identify the forces acting on it.

## PRODUCT BENEFITS

- Enables students to think critically, solve problems, and get them acquainted with data analysis.
- Easy to set up.
- Extensive learning outcomes help students to thrive in science.
- Create a playful, collaborative environment where students want to learn.

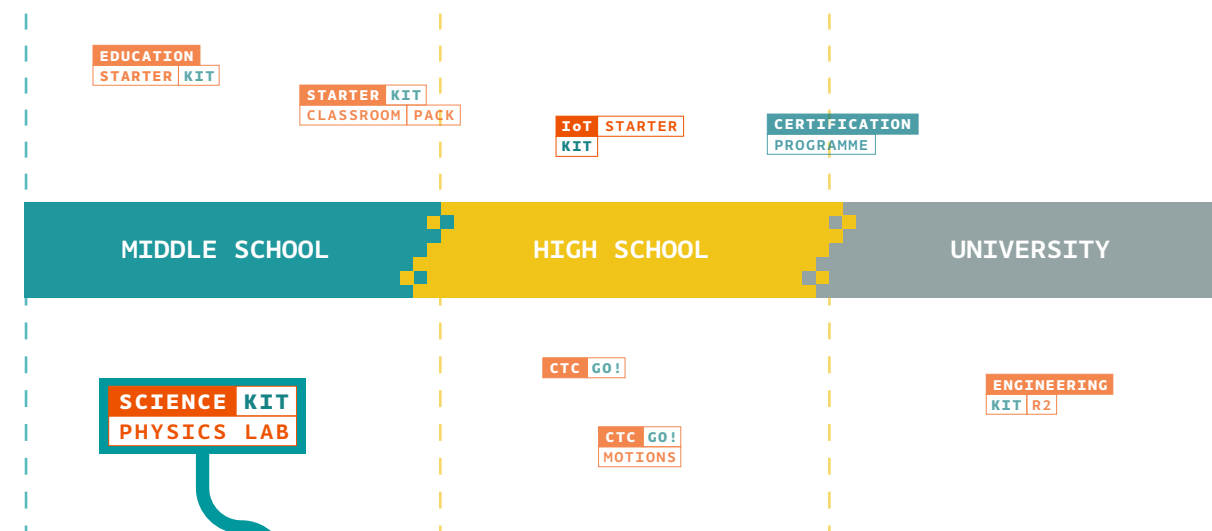
## CURRICULUM ALIGNMENT

Science Kit Physics Lab projects are aligned with national curricula for students aged 11-14 including the Next Generation Science Standard (NGSS) for K-12 in the U.S. and the National Curriculum of England. Additionally, these lessons teach students important 21st-century skills such as problem-solving and critical thinking.



## ARDUINO® EDUCATION LEARNING EVOLUTION

Our aim is to help students achieve their dream careers in STEAM. Our cross-curriculum content and open-source approach are essential tools for STEAM classes that develop with students as they progress **through middle school, high school, and university**, preparing them for a successful future.



Step by step, we champion students as they progress through their STEAM education with projects that increase in complexity to challenge them as they develop their skills.

We support students in achieving successful careers in STEAM-related fields with educational kits that are targeted to their age and ability. The technology is practical, creative, and fun. Students learn using the same products that companies around the world use in applications like rapid prototyping, AI, drone technology, and developing machine learning.

We are currently focused on translating our content into more languages and mapping it to more curricula. If you have a project that you would like to have localised for your country, please contact us with your suggestion.

For more info visit: [arduino.cc/edu](https://arduino.cc/edu)

