



From Classroom to Career, Arduino Empowers STEAM Educators.

By teachers, for teachers

ARDUINO.CC/EDUCATION

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Industry ready self-directed solutions

Boards

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ABOUT ARDUINO®

Arduino was founded to make complex technology simple, giving everyone the tools to innovate.

Born to provide an easy-to-use platform for anyone making interactive projects, we have adapted over the years to new needs and challenges, branching out into products for IoT, wearables, 3D printing, and embedded environments. Today, we are the leading opensource hardware and software company in the world and offer a full ecosystem of solutions – electronic components, kits, an integrated development environment (IDE), extensive cloud services, and more! – to bring together the greatest ease of use with the reliability of high-quality products.

We do all of this for (and with!) a vibrant community of approximately 30 million active users, including hobbyists, artists, designers, developers and engineers, as well as teachers and students of all ages.



David Cuartielles, Arduino Co-Founder



ABOUT ARDUINO® **EDUCATION**

There's often a significant gap between education and the job market. In fact, our schools and universities can be severely lacking in technology, design methodology, and the mindset for fostering the innovators, scientists, and creators of the future.

To bridge this gap, Arduino Education strives to bring **easy-to-use**, **affordable**, and **skill-oriented solutions** to teachers.

We want to be the game-changer for students and teachers in STEAM education.

Our hardware, software, and learning content are designed in collaboration with educators, tailored for specific groups like high school science teachers or university engineering professors to perfectly align with their curriculum needs.

The learning content, projects, and activities link to the real world, and you get this along with the hardware and software for an all-in-one, seamless teaching and learning experience.

We champion students as they progress through their STEAM education by providing relevant, creative, and fun technology, programming, and curriculum content that enables them to thrive. And we support the needs of educators like you, by giving you the tools you need to feel at ease in delivering successful STEAM lessons and teaching your students real-world skills.

7

Bett Finalists and Winners



2.8M

Social Media FOLLOWERS¹

10.5M

Website traffics

30M

Arduino Community 45+

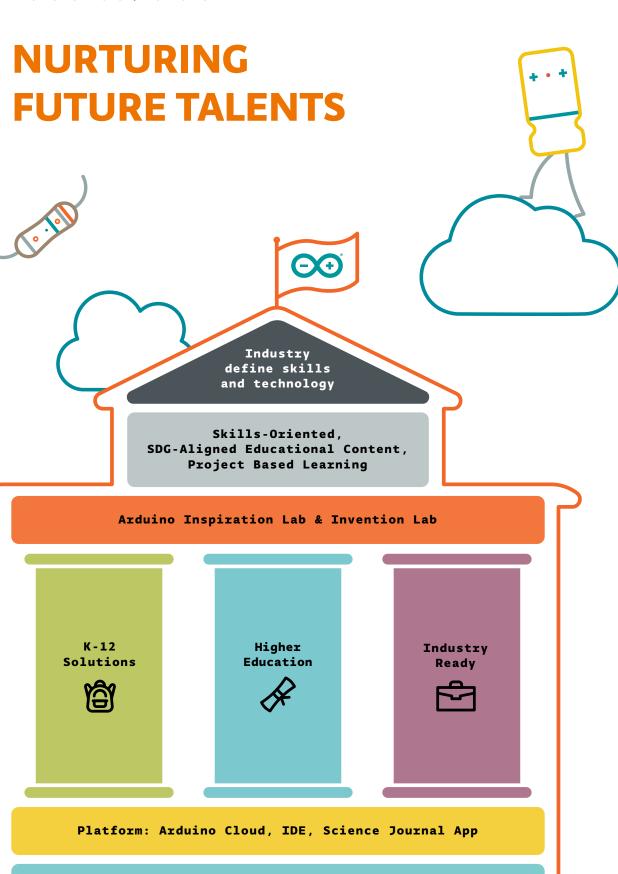
Dedicated education supplier partners

100+

teacher ambassadors

¹Arduino's overall footprint, including a large EDU audience, with 2.8M followers, data until November 2023





Hardware: Arduino boards, carriers, components

Arduino Community

DESIGNED WITH EDUCATORS, FOR EDUCATORS

At Arduino, user-centric design isn't just a principle; it's the essence of our approach, especially when it comes to meeting educators' needs. With a firm commitment to creating an enriching educational experience, we have integrated the design thinking process into every phase of product development.

We have created learning materials that synchronize with real-world activities, fostering a dynamic and engaging learning environment.

Our focus on project-based learning ensures that you can seamlessly integrate Arduino into your curriculum, making learning informative, hands-on, and fun.

To guarantee the utmost reliability and functionality, every component and kit goes through extensive validation processes. This commitment to quality ensures you can trust Arduino Education products to deliver a consistent and dependable experience in your classroom.

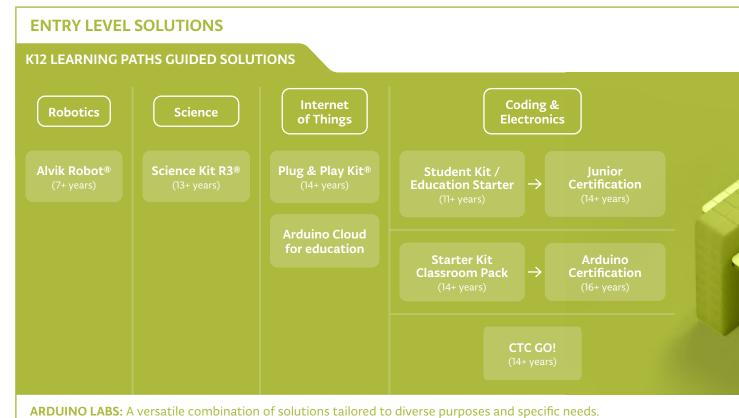




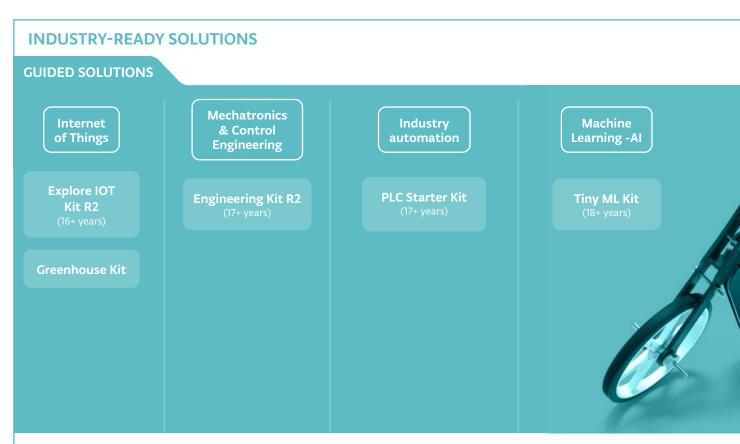
SCAN QR-CODE



LEARNING PATH

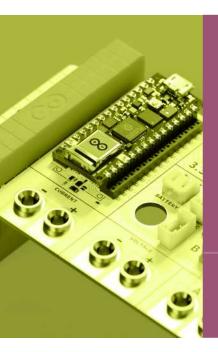


AND ON CEASE. A VERSICAL COMBINATION OF SOLUTIONS CANOTEC CO CIVETSE PURPOSES AND SPECIME NECES.



ARDUINO LABS: A versatile combination of solutions tailored to diverse purposes and specific needs.

K12 CROSS LEARNING PATH SELF-DIRECTED SOLUTIONS



UNO FAMILY

UNO R4 WiFi UNO R4 Minima UNO R3

NANO FAMILY

Nano ESP32 / Nano Every Nano 33 BLE SENSE R2 Nano RP2040 Connect

MEGA BOARD

SELF-DIRECTED SOLUTIONS



OPTA FAMILY

Opta WiFi / Opta RS485 Opta Lite Expansion

GIGA FAMILY

GIGA R1 WiFi /GIGA Display Shield GIGA Display Bundle

UNO FAMILY

UNO R4 WiFi / UNO R4 Minima UNO R3

NICLA FAMILY

Nicla Vision / Nicla Voice Nicla Sense ME / Nicla Sense ENV

PORTENTA FAMILY

Portenta H7 / Portenta X8 / Portenta C33 / Portenta Machine Control / Portenta Hat Carrier

NANO FAMILY

Nano ESP32 / Nano Every Nano 33 BLE SENSE R2 Nano RP2040 Connect

EDUCATIONAL **EVENTS/HIGHLIGHTS**



THAILAND ARDUINO DAY

Our Thai partner, Imagineering, organized an inspiring Arduino Education Day in the vibrant city of Bangkok.

Over 3,000 students from schools across the region participated in the three-day event, which was hosted with support from leading universities. Students took part in a variety of workshops and competitions using Arduino technology.

Adding to the excitement, Arduino CEO Fabio Violante delivered a compelling keynote speech in which he shared his powerful vision on the role of Arduino in driving education and equipping learners with future-ready skills.





USE CASE

"I want to try that!": How Arduino is inspiring active learning at Acera School

At Acera School, a K-8 institution for gifted students in Greater Boston, Arduino tools are transforming education by fostering hands-on exploration and creativity. With the guidance of physics and maker space specialist Alison Earnhart, students are breaking barriers to learning electronics and coding, moving from passive learners to enthusiastic creators.

Making Electronics Accessible

For many young learners, coding and electronics can seem intimidating. However, Arduino's accessible ecosystem provides the scaffolding students need to confidently explore these subjects. As Alison explains, "Arduino shows students how coding and electronics connect with their passions, turning hesitation into excitement."

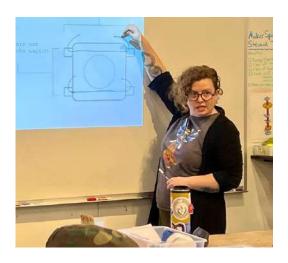
Project-Based Learning in Action

Through project-based learning (PBL), Acera students tackle hands-on challenges, mastering electronics and coding while developing critical thinking and problem-solving skills. Using the Arduino Starter Kit as a guide, students take ownership of their education, often extending their projects beyond the classroom to share with family and friends.

A Collaborative Learning Journey

Alison's approach also emphasizes self-learning and collaboration. By learning alongside her students, she models how to navigate challenges and use resources effectively. Acting as a facilitator and project manager, she empowers students to design, troubleshoot, and execute their own ideas.

Arduino at Acera School exemplifies how technology can inspire students to become active creators, equipping them with the confidence and skills to innovate in an ever-evolving world.



THE MEDELLÍN CHALLENGE: Pioneering Global STEM Collaboration

Arduino Education partnered with The Colegio San Jose las Vegas, to help students finding solutions to pressing societal issues such as ensuring equitable public service access, nurturing food sovereignty, and reducing school dropout rates.

Over 120 students, teachers, and mentors from all around the world, converged in the city of Medellín, Colombia, to craft innovative sustainability solutions highlighting the true essence of collaborative learning.





SCAN QR-CODE

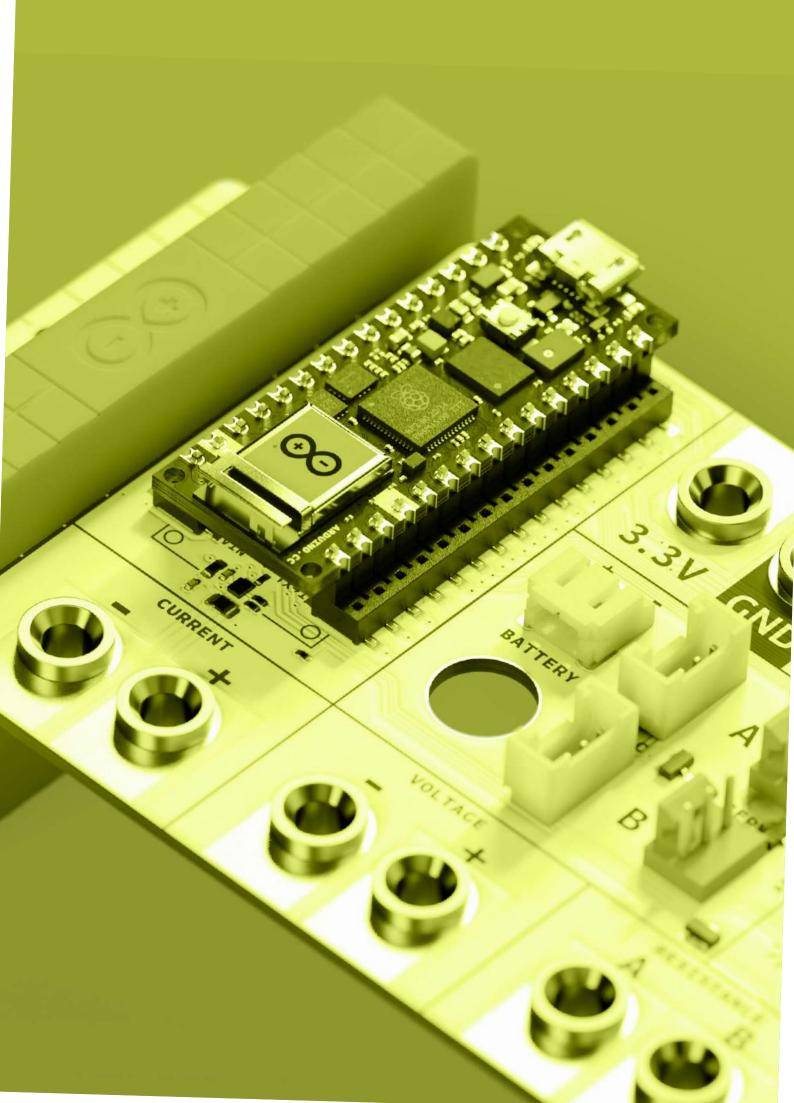


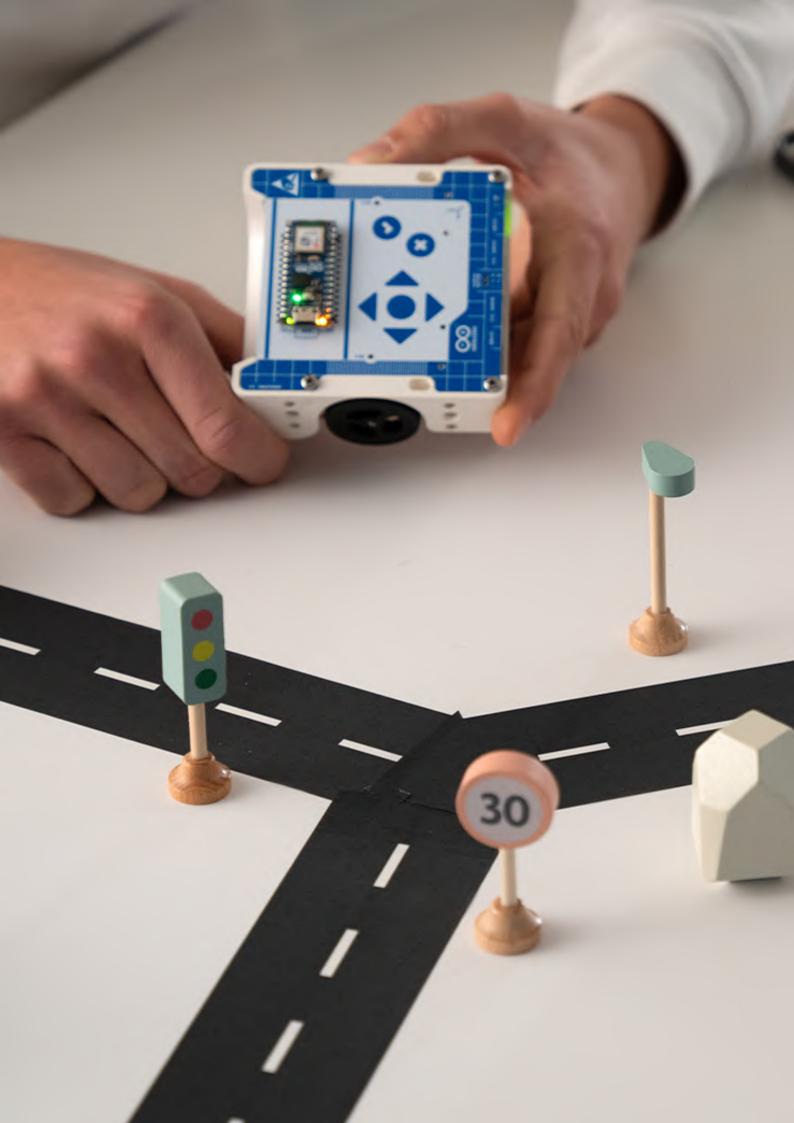


K-12 ENTRY LEVEL GUIDED SOLUTIONS









Robotics & Coding Education

Robotics and coding education in K-12 schools is a crucial pillar in preparing students for a future dominated by technology and innovation. This educational approach transcends traditional learning methods, immersing young minds in the fascinating world of technology from an early age. Through robotics and coding, students gain a hands-on understanding of important concepts such as computational thinking, problem-solving, and digital literacy.

Integrating robotics and coding into the curriculum is not merely about teaching technical skills; it's about fostering an environment of creativity and curiosity. Students learn to conceptualize, design, and execute projects, which enhances their abilities in science, technology, engineering, and mathematics (STEM). This method of experiential learning is invaluable, as it empowers students to see the practical application of abstract concepts.

Moreover, these subjects prepare students for the future workforce, equipping them with the skills needed in an increasingly digital world. By learning to code and understand robotics, students develop a skill set that is becoming essential across a wide range of professions.

Emphasizing robotics and coding in K-12 education also nurtures soft skills such as teamwork, perseverance, and innovative thinking. As students work on projects, they learn to collaborate, think critically, and approach problems with a solution-oriented mindset.

In summary, robotics and coding education in K-12 schools is about building a foundation for lifelong learning and adaptability in a rapidly advancing technological era. It's about shaping thinkers, creators, and innovators who will lead and thrive in the future.



QUICK INFO - BLOCK-BASED CODING

Age: **7**+

Lessons: 6 More lessons are coming soon



No. of students per kit: 2 students

Languages:

English

Italian

Spanish

QUICK INFO - MICROPYTHON

Age: 12+

Lessons:

No. of students per kit: 2 students

Languages:

English

Italian

ARDUINO® ALVIK ROBOT

Your life-long learning companion

Alvik is a versatile and scalable learning robot that supports learners throughout their robotics and programming journey. Catering to everyone, regardless of age, experience or academic level, this compact and powerful robot delivers limitless opportunities for hands-on learning and creativity.

My students have always loved Arduino because it unlocks their creative potential, and Alvik is no exception. Traditional robotics products have never been the "perfect fit" at our school, but with Alvik, Arduino has found the best balance between advanced features and ease of use for all learners. Equipped with numerous built-in sensors and supporting MicroPython, students have no trouble getting started and experiencing immediate results. Best of all, you can upgrade the robot with additional external components, attach custom 3D printed parts, and connect online to become part of the Internet of Things. It's an absolute game-changer.

Austin Gardner, El Altillo International School in Jerez, Spain





KEY LEARNING VALUES

- It offers a diverse learning path through different programming languages, starting from blockbased coding through to MicroPython and Arduino language.
- Alvik is equipped with a line-following sensor array, Time of Flight distance sensor, 6-axis accelerometer and gyroscope, and RGB color sensors. By integrating diverse sensors, it enhances learning in coding and problem-solving, inspiring creativity and real-world STEM skills.
- The rechargeable, replaceable battery ensures uninterrupted use.
- Easily extendable with M3 screws, LEGO®
 Technic™ and plug-and-play options (Servo,
 Grove, Qwiic) for external sensors-no soldering
 needed. This encourages hands-on learning and
 fosters personal expression.

HOW DOES THE KIT WORK IN YOUR CLASSROOM?

Students start by creating simple programs and gradually progress to more complex ones, using Alvik's diverse sensors to simulate real-life applications. The step-by-step lessons have a linear structure and are easy to follow. Students can work in pairs to encourage collaboration, with guidance from the teacher, or they can tackle tasks independently. Each lesson includes challenges that encourage problem-solving and deeper learning through hands-on exploration.

WHAT DOES THE KIT INCLUDE?

Hardware:

- 1x preassembled Alvik robot with the Nano ESP32 board as the main controller
- · Rechargeable battery
- 1 USB-C® cable

Software:

- · Arduino Lab for MicroPython
- mBlock (Both available for free in online and offline versions.) Compatible with Windows, MacOS, Linux and Chromebooks
- · Arduino IDE

Learning content

- Access to the free Alvik online courses on <u>MicroPython</u> and <u>block-based coding</u>, along with dedicated support.
- For setting Alvik on the Arduino IDE visit Arduino docs.

HIGHLIGHT:

Extend the robot's structure with M3 screws and LEGO® connectors, and easily connect external sensors to plug-and-play connectors without soldering or complex wiring.

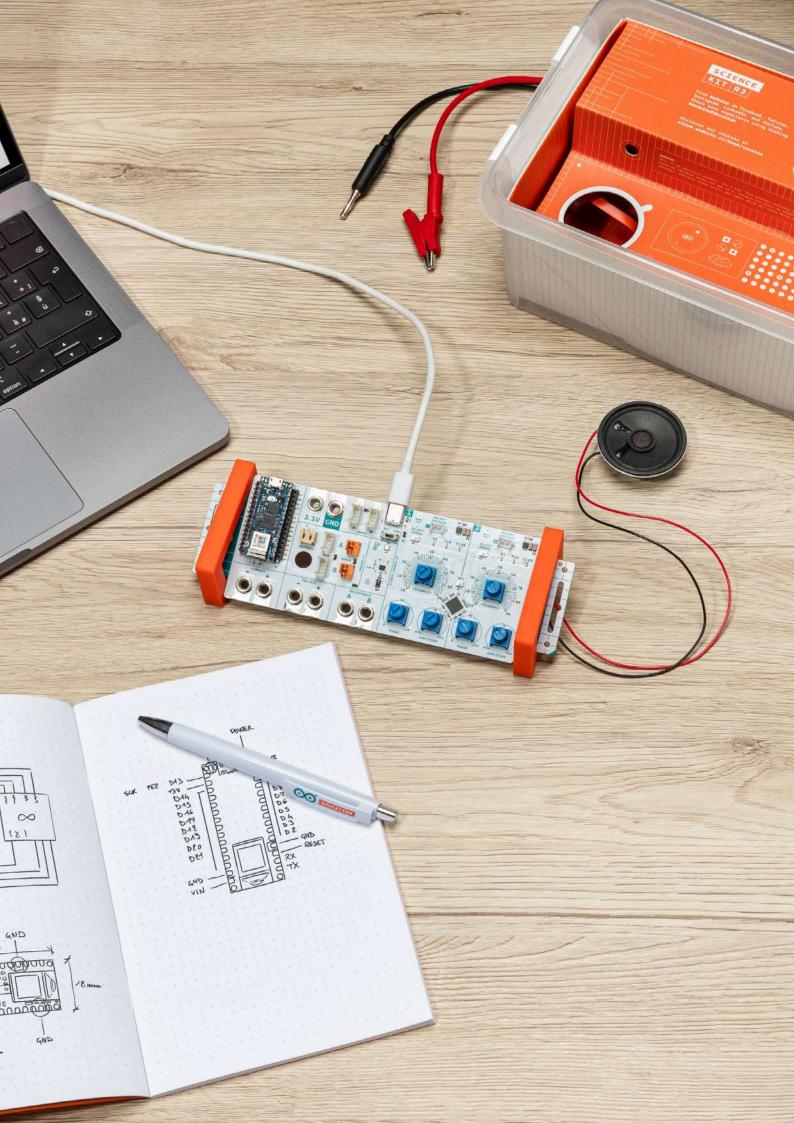


Science Education

Science education, particularly in the realm of physics, holds an indispensable place in shaping the minds of future innovators and thinkers. At its core, physics is the foundational science that explains the workings of the universe, from the smallest particles to the vast expanse of the cosmos. Understanding physics not only enriches a student's perception of the world but also hones critical thinking and problem-solving skills.

Incorporating modern technologies like the Arduino Science Kit R3 into physics education is pivotal. This approach aligns with contemporary pedagogical theories that emphasize experiential learning, where students learn by doing. The Arduino kit, a versatile tool for exploring real-world scientific principles, enables hands-on experimentation. It helps in bridging the gap between theoretical concepts and their practical applications, making learning more engaging and relevant.

Furthermore, the use of such technologies in classrooms prepares students for the future. It introduces them to the skills needed in a tech-centric world, like programming and data analysis, while reinforcing the importance of scientific inquiry. By integrating cutting-edge tools like the Arduino Science Kit R3 in physics education, we not only enhance the learning experience but also equip students with the competence to innovate and excel in their future endeavors.





QUICK INFO

Age: 13+

Hours of learning

17+

engaging projects



No. of students per kit: 2 students



The content is aligned with AP PHYSICS, IB AP PHYSICS, IB DIPLOMA, NGSS, NYS, UK(E) - KS4/5

Languages: **English**

ARDUINO® SCIENCE KIT R3

Experience Science like never before!

Encourage a deeper understanding of physics through direct application, transforming abstract concepts into tangible experiments. Paired with the Arduino Science Journal app, students effortlessly engage in real-time data collection and analysis, enhancing their scientific inquiry skills.

Our goal is to transform the science Lab experience from following boring instructions to a creative endeavor, where students find new ideas and solutions based on the laws of science they discover. The Arduino Science kit is just the tool we need for this goal: it connects the control and measuring processes that are typical in Science with the rich world of the Maker Movement.

Dr. André Bresges, Institute of Physics Education, University of Cologne





KEY LEARNING VALUES

- Strengthen data literacy & scientific enquiry skills
- Grasp complex concepts through real-world experiments
- Foster adaptability by allowing utilization in classrooms, labs, or outdoor settings
- Enable students to design their experiments, promoting a self-directed learning and active participation approach

HOW DOES THE KIT WORK IN YOUR CLASSROOM?

Students conduct engaging experiments using the hardware and collect and analyze real-time data using the Science Journal app.

Simply connect mobile devices to the Arduino board, construct experiments, and begin recording data using the onboard sensors. The kit's Bluetooth® connectivity ensures a seamless transition of data from the Arduino board to the students' mobile devices for further analysis.

WHAT DOES THE KIT INCLUDE?

Hardware:

- Science Kit R3: A ready-to-use carrier powered by the Arduino Nano RP2040 Connect with a wide array of embedded sensors
- External sensors: Ultrasonic distance sensor and temperature probe sensor

Software

Science Journal App:

A fun science classroom in your pocket. Simple to use and easy to get started with, the Science Journal App is free and classroom & homeschool friendly. Students get to learn about the scientific method, play with data and conduct experiments just like any other scientist from wherever they are!

Learn more at: arduino.cc/education/science-journal

Learning content

 Access to the Explore Physics online platform and dedicated support.



SEE THE CONTENT HERE:

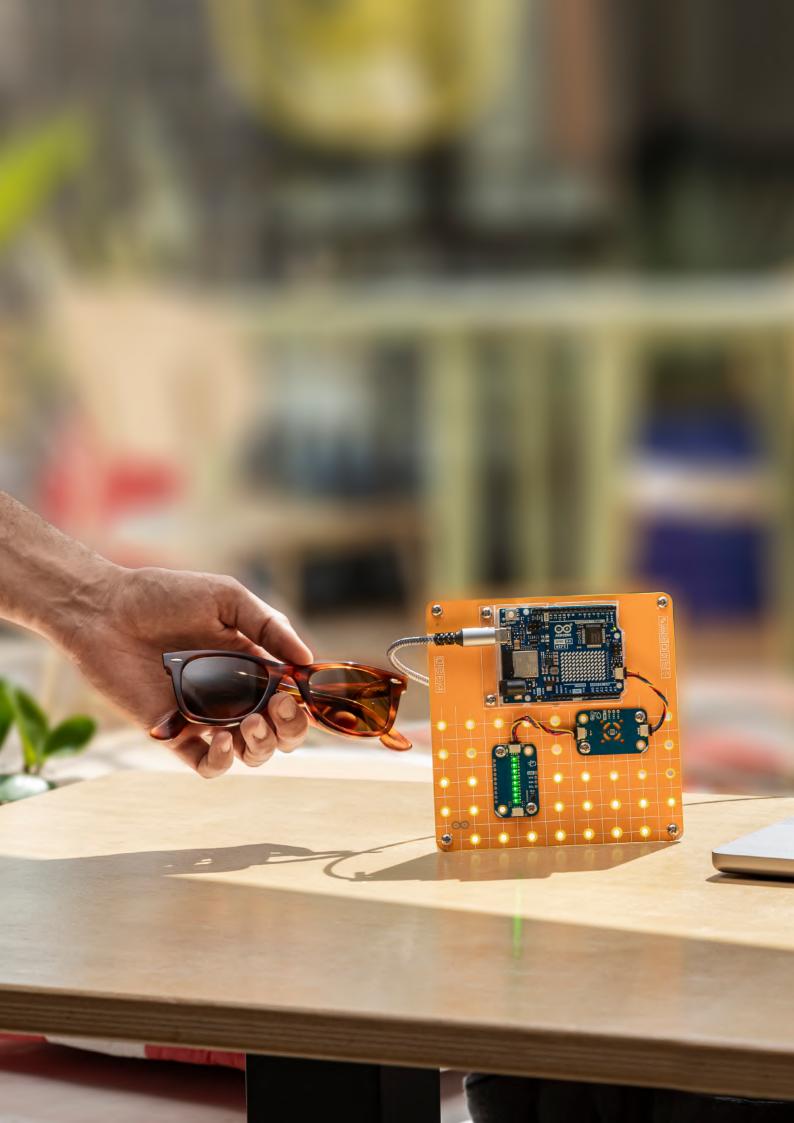
courses.arduino.cc/explore-physics/

HIGHLIGHT:

No coding or electronics experience needed!







Internet of Things Education

The integration of the Internet of Things (IoT) into K-12 education is revolutionizing teaching and learning in the digital era. Among the diverse tools available for introducing students to IoT, the Arduino Plug and Make Kit stands out as an intuitive and accessible solution. Designed as a plug-and-play kit, it empowers students to dive into the world of interconnected devices with ease and confidence

The Arduino Plug and Make Kit simplifies the process of creating IoT projects by offering pre-configured templates that enable students to build interactive systems quickly and effortlessly. This user-friendly approach reduces the complexity of setup and programming, allowing learners to focus on understanding the underlying concepts and exploring the practical applications of IoT.

With this kit, students can experiment with real-world scenarios such as smart home devices, environmental monitors, or connected appliances, fostering a deeper grasp of how IoT operates and its potential in daily life. The plug-and-play nature of the kit ensures that even beginners can achieve success while offering enough flexibility for more advanced learners to customize and expand their projects.

A critical feature of the Arduino Plug and Make Kit is its seamless integration with the Arduino Cloud. The cloud platform allows students to store, visualize, and analyze the data generated by their IoT projects in real time. By leveraging the Arduino Cloud, students not only enhance their understanding of data management and analytics but also gain valuable collaboration skills as they share insights and work on group projects.

The inclusion of IoT in K-12 education provides students with an engaging and accessible gateway into this dynamic field. By combining hands-on experimentation, pre-configured templates and powerful cloud tools, students can develop the technical skills and critical thinking abilities needed to tackle modern challenges. It inspires a new generation of problem solvers ready to harness the power of IoT to create a smarter, more connected future.



QUICK INFO

Age: **14+**

Projects:

7



Languages:

English

Italian

Spanish

German

ARDUINO®PLUG AND MAKE KIT

A beginner-friendly, plug-and-play kit that makes building IoT projects fast and simple.

Designed for hands-on learning, it includes guided projects such as a smart weather station and a touchless lamp, allowing users to explore programming and experiment with connected devices without the need for extensive setup.

Ideal for educators and new makers, this kit offers both simplicity and depth for continued exploration into IoT and beyond.







KEY LEARNING VALUES

- Users can quickly create functional IoT devices and manage them via the Arduino Cloud
- Get started quickly with pre-configured Arduino Cloud templates, designed to simplify complex setups by providing ready-to-use configurations
- Customizable dashboards make it easy to visualise data on multiple devices, including smartphones

HOW DOES THE KIT WORK IN YOUR CLASSROOM?

Students can work in pairs to create projects by following the learning platform or designing their own devices. After attaching the Modulinos to the UNO R4 board's Qwiic connectors and securing them on the Modulino base, they can import the ready-made templates, enabling quick setup and functionality.

Students can monitor and control projects through customizable and shareable cloud dashboards. For advanced projects or further customization, they can modify the included code from the templates as desired.

WHAT DOES THE KIT INCLUDE?

Hardware:

- 1x Arduino UNO R4 WiFi board
- 7x Qwiic-connected Modulino® sensors and actuators-such as temperature, motion, and LED displays
- 7x Qwiic cables
- 1x Modulino® base
- 1 USB-C® cable
- M3 Screws and nuts

Software:

Arduino Cloud Editor

Learning content

 Access to the Plug and Make free online course and dedicated support. courses.arduino.cc/plugandmake/









ARDUINO®CLOUD FOR EDUCATION

Enrich learning with Cloud connectivity.

This all-in-one platform brings together coding, the Internet of Things, and STEAM education. With easy classroom management, personalized learning, and links to real-world projects, your students are more engaged.







BENEFITS OF USING THE CLOUD FOR SCHOOLS

- documentation
- ✓ Keeps learning materials and features fresh and up-to-date
- Easier to connect and collaborate
- Personalize learning
- Secure platform

WHAT CAN YOU DO WITH **CLOUD FOR SCHOOLS?**

- Create and code projects online with hardware (Arduino boards as well as third-party compatible boards)
- Create, deploy, and monitor IoT projects
- · Access courses, tutorials, management tools, and integrations

The easy-to-use applications, built-in examples, IoT templates, tutorials, and documentation offers the opportunity for every student, from beginners to experienced learners, to create and learn with confidence.

HOW TO GET STARTED WITH THE CLOUD

Try the Cloud for free with your Arduino, Google, Apple or GitHub account at app.arduino.cc.

THE SCHOOL PLAN

Take teaching and learning to the next level with the Arduino Cloud School Plan. With this pay-per-person subscription, you can:

- · Boost learning and seamlessly enhance collaboration with peers and students
- · Differentiate and personalize lessons by creating shared spaces to provide additional resources, assignments, or supplementary materials to students
- · Make collaboration easier and track students' progress with Google Classroom integration

You'll get a complete educational experience when you use the Cloud School Plan with Arduino Education kits, including high-quality content. Some of our kits are aligned to national standards, while others are projectbased with clear learning objectives.

HIGHLIGHT:

Every student learns differently. The Arduino Cloud allows for personalized and interactive learning, ensuring that every student's needs are met.



HOW TO BUY IT

Purchase or upgrade a Plan for enhanced classroom experience: arduino.to/24catacloud



Electronics & Coding Education

The inclusion of electronics and hands-on learning in K-12 education, using Arduino's innovative products like the Student Kit, CTC GO!, and Junior Certification, is transforming how students engage with technology and understand its applications in the real world. These educational tools provide a foundational understanding of electronics, programming, and coding in a tangible and interactive manner, making them ideal for young learners.

The Student Kit is an excellent starting point for students beginning their journey into electronics and programming. It guides them through a series of exciting activities, introducing fundamental concepts like current, voltage, and resistance. This kit encourages critical thinking and problem-solving skills, essential in the 21st century.

CTC GO! is a step further, offering a comprehensive learning program that takes students from the basics of electricity and coding to advanced circuit building and programming. This kit includes playful, hands-on experiments that are both engaging and educational, making learning relevant and fun.

The Junior Certification is a key element in this educational journey. This certification assesses and validates students' knowledge and skills in programming, electronics, and Arduino concepts. It provides a structured way for educators to gauge individual student's progress and identify areas for improvement. The certification also serves as a springboard for more challenging learning experiences with Arduino, boosting students' confidence in STEM subjects.

By incorporating these Arduino products into K-12 education, students are not only learning the technical skills of electronics and programming but are also being prepared for future careers in a technology-driven world. They develop a deeper understanding of how technology works and how it can be applied to solve real-world problems, laying a solid foundation for their future educationa and career paths.





QUICK INFO

Age:

11+

Lessons:

11

2x open-ended projects

25+ hours of learning



Languages:

English

Chinese

Croatian

- - -

German

French

Portuguese Spanish

Italian

Thai

ARDUINO® STUDENT KIT

Learn electronics and get started with programming with this beginner-friendly kit.

I was really impressed with the way students took their own creative liberties with their Arduino projects... It was really cool to see students innovate and see what they did on their own.

Matthew de Venecia, Primary Instructor for the STEM Illinois Nobel Project





KEY LEARNING VALUES

- Deeper understanding of the basic fundamentals of coding and electronics.
- Develop workplace readiness skills such as creativity, collaboration, critical thinking, and communication.
- How sketches students create work to control their circuits.
- Learn how to read schematics
- Bonus material to enhance learning about specific concepts.

HOW DOES THE KIT WORK IN YOUR CLASSROOM?

It is recommended to follow the content in a linear fashion as each lesson builds off the previous one. Student lessons aren't over once the project is built and coded. They can perform experiments with their projects to get a deeper understanding of how they work. Students can take notes, record data, draw conclusions, and answer reflection questions using the Student logbook.



WHAT DOES THE KIT INCLUDE?

Hardware:

- · UNO R3 board
- Projects board
- · Collection of sensors and actuators
- Multimeter

Software:

• Arduino IDE, Arduino IDE 2

Learning content

 Access to the Student Kit online platform and dedicated support

HIGHLIGHT:

Each lesson maps out inventions and inventors that relate to what students are learning and doing



SEE A SAMPLE LESSON HERE:

edu-content-preview.arduino.cc/
content-preview/middle_school/lesson/
CONTENTPREVIEW+STUDENTKIT



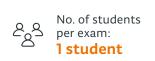


QUICK INFO

Age: **14+**

Multiplechoice, online exam

25 questions 60 minutes



Languages:

English

Italian

Spanish

ARDUINO®JUNIOR CERTIFICATION

Junior Certification simplifies educators' assessment of students' aptitude, skills, and knowledge in programming, electronics, robotics, and Arduino concepts.

The exam is based on topics covered by the Arduino Student Kit and the Education Starter Kit (you only need to use one of these kits, not both).



SUBJECT AREAS

- Electricity
- · Circuits and schematics
- · Arduino IDE and boards
- · Current and voltage
- Digital logic
- Electronic components
- Programming

HOW DOES JUNIOR CERTIFICATION WORK?

- The exam can be completed from any computer with access to the Internet
- It consists of 25 questions with a 60-minute time limit
- Students receive their results immediately after submission, indicating whether they passed or failed. Passing the exam will grant students the Arduino Junior Certification certificate

THERE ARE TWO WAYS TO GET CERTIFIED:

- ① By getting the Bundle that includes the Arduino Student Kit, a code to activate the online exam and one attempt to pass.
- ② Access to the exam only with one attempt to pass.

BENEFITS OF TAKING THE EXAM

- Assess your students' work in subjects that are typically difficult to evaluate
- Identify areas for improvement, whether that's at an individual or class level
- · An affordable way to certify skills
- Boost students' confidence in STEM subjects with self-evaluation
- Take the exam online anywhere, at any time







QUICK INFO

Age: 14+ Projects **15**



No. of students per pack:



No. of students per kit:

Languages:

- **English**
- Italian
- Spanish
- French

- German
- Arabic
- Portuguese
- Japanese
- Chinese
- Korean

ARDUINO® STARTER KIT **CLASSROOM PACK**

This bundled solution includes six of the most popular Arduino Starter Kits, making it the perfect choice for introducing students to electronics. Designed for STEM education at home or in the classroom, the kit requires no prior experience. Through fun, hands-on projects, students learn coding and electronics while exploring key concepts such as current, voltage, digital logic, and programming fundamentals. They'll also work with sensors, actuators, and both digital and analog signals. Along the way, students develop essential skills like critical thinking, collaboration, and problem-solving.





KEY LEARNING VALUES

- Hands-on learning: Engages students with practical, interactive projects that make coding and electronics fun and accessible.
- STEM skill development: Teaches core concepts like current, voltage, digital logic, and programming fundamentals.
- Critical thinking: Encourages problemsolving, creativity, and logical reasoning through real-world challenges.
- Collaborative learning: Promotes teamwork and communication as students work together on projects.

HOW DOES THE KIT WORK IN YOUR CLASSROOM?

Students work in pairs and follow step-by-step instructions in the Projects Book, combining coding and electronics to build circuits and solve challenges. Students take turns assembling components, writing code, and troubleshooting, promoting hands-on experience and critical thinking.

Teachers can introduce key concepts like current, voltage, and programming, before guiding students as they experiment with sensors, actuators, and signals. By working together, students learn to communicate effectively, solve problems creatively, and gain confidence in STEM skills through real-world applications.

WHAT DOES THE KIT INCLUDE?

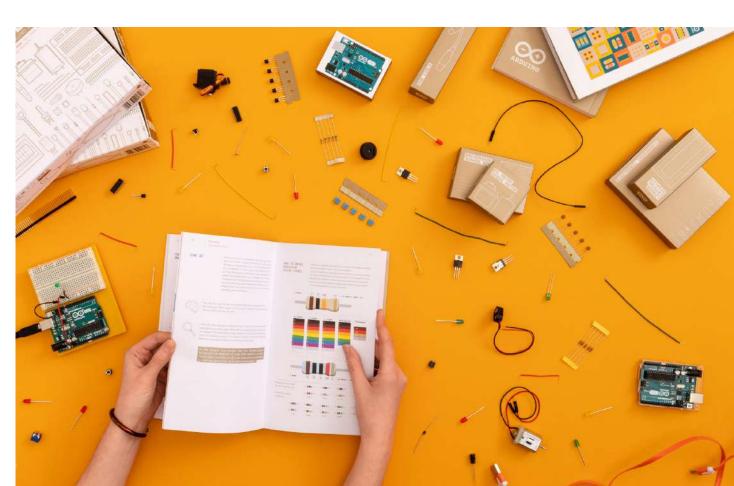
Hardware:

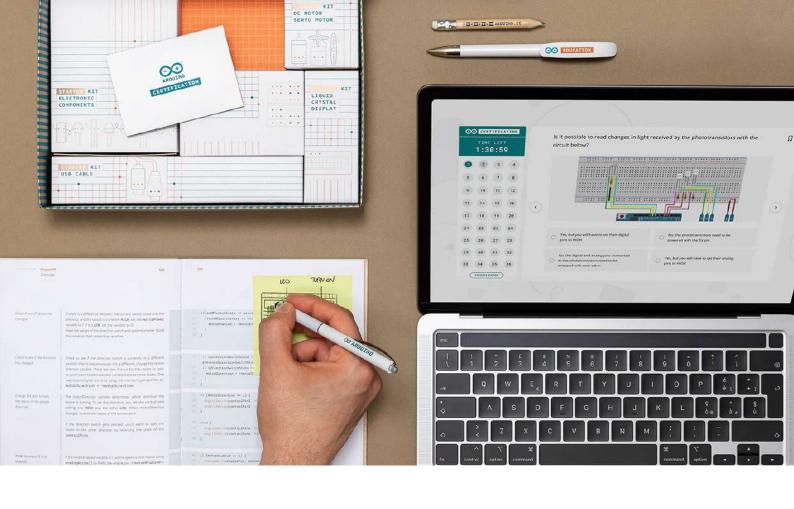
- UNO R3 board
- Projects board
- · Collection of sensors and actuators
- · Projects book

Software:

· Arduino IDE, Arduino IDE 2







QUICK INFO



ARDUINO®CERTIFICATION

The Arduino Certification exam assesses skills based upon exercises comprised of practical tasks from the Arduino Starter Kit.

We want to certify all learners in grades 10 through 12 with the Arduino certification because we believe that it will give them a really good electronics foundation for their futures. Integrating international certifications form part of our vision to extend our learners' skill sets beyond the standard curriculum. This enhances our learners' attractiveness to employers and universities and provides hands-on experience that allows for building their futures while still at school.

Richard Knaggs, director of Technology Innovation Parklands College, Cape Town, South Africa

SKU: AKX00020



SUBJECT AREAS

- Electricity
- · Reading schematics and circuits
- Arduino IDE
- · Arduino boards
- · Frequency and duty cycle
- Electronic components
- Programming logic
- Programming language and syntax

HOW DOES THE ARDUINO CERTIFICATION WORK?

- The exam can be completed from any computer with access to the Internet
- It consists of 36 questions with a 75-minute time limit
- Students receive their results immediately after submission, indicating whether they passed or failed. Passing the exam will grant students the Arduino Certification certificate

THERE ARE TWO WAYS TO GET CERTIFIED:

- ① By getting the Bundle that includes the Arduino Starter Kit, a code to activate the online exam and one attempt to pass.
- 2 Access to the exam only with one attempt to pass.

BENEFITS OF TAKING THE EXAM

- **Skill recognition:** Officially validates students' coding and electronics knowledge.
- Confidence boost: Builds confidence in their STEM abilities.
- Academic advantage: Enhances portfolios for future education or careers.
- Learning motivation: Encourages deeper understanding and hands-on learning.





QUICK INFO

Age: 14-17 Hours of learning

8x practical lessons

6 project building

experimental sessions



No. of students per kit: 24 students

Languages:

- **English**
- French
- German
- Italian
- Portuguese Spanish

ARDUINO® CTC GO! CORE MODULE

CTC GO! is a comprehensive, hands-on learning program that guides students through the fundamental concepts of electronics and coding, and challenges them to assemble, wire and program a set of fun tabletop games.

TT

The student-led lessons navigate users through wiring their own circuits and then programming the included Arduino board via the Arduino Software (IDE) to make learning come to life on the table in front of them.

Corinne Pachl, Technical Editor, Pitsco





KEY LEARNING VALUES

- Learn the basics of electronics, reading schematics, and connecting commonly used components
- Text-based programming language, controlling components, and reading data using code
- Creative ways of using technology, designing and developing physical computing projects
- Working collaboratively to tackle real-world problems
- Enhance students' problem-solving and communication skills

HOW DOES THE KIT WORK IN YOUR CLASSROOM?

Students work in teams of 3 (no more than 4 members per team is recommended) to build the activities. Then, each group is assigned a project, encouraging teamwork and problem-solving skills. The collaborative aspect is further emphasized by having two groups work on the same project simultaneously. This arrangement promotes knowledge-sharing, trouble-shooting assistance, and the exchange of experiences between the paired groups.



LEARN MORE

WHAT DOES THE KIT INCLUDE?

Hardware:

- Arduino UNO R4
- · Arduino UNO R4 WiFi
- Arduino UNO R4 Minima
- Arduino UNO R3
- Arduino MEGA 2560 R3
- Arduino Nano ESP32
- Arduino Nano 33 BLE Sense REV2
- · Arduino Nano RP2040 Connect
- · Arduino Nano Every

Software:

• Arduino IDE, Arduino IDE 2

Learning content

 Access to the CTC GO! online platform and dedicated support.

HIGHLIGHT:

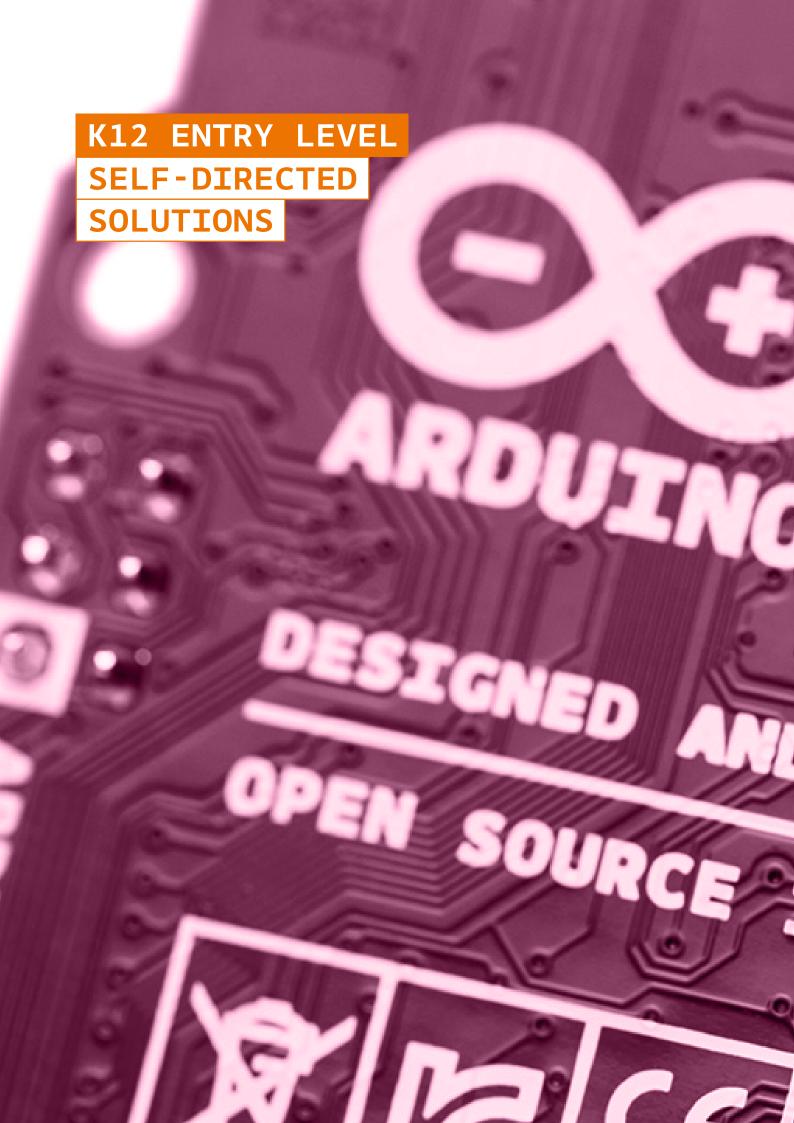
Content Aligned with NGSS for K-12 and the national UK Curricula.



SEE A SAMPLE LESSON HERE:

edu-content-preview.arduino.cc/
content-preview/high_school/project/
CONTENTPREVIEW+CTCGO









UNO FAMILY

UNO R4 WIFI

Equipped with enhanced processing power and builtin Wi-Fi® / Bluetooth® connectivity, the UNO R4 WiFi board bridges the gap between beginner-friendly design and advanced IoT capabilities. Its robust performance and ease of use make it an excellent choice for educators and students exploring wireless communication and automation. The UNO R4 WiFi includes a fully-addressable LED matrix (12x8 matrix) and Qwiic I2C connectors, which allow users to connect multiple plug and play connectors without the need for soldering. Students can create, for instance, a remote temperature logger using a temperature sensor to collect data on the Arduino Cloud, allowing realtime monitoring and analysis. This project combines programming, sensor integration, and IoT concepts in an accessible and practical way.

Program it with the Arduino IDE and the Cloud editor

LEARN MORE

SKU: ABX00087



UNO R4 MINIMA

The UNO R4 Minima offers powerful processing capabilities in a cost-effective and compact design, making it perfect for students and educators starting with advanced microcontroller projects. Its simplicity and versatility allow for seamless integration with sensors and actuators. A great option for learning coding, hardware basics, robotics and creating small-scale projects that don't require wireless connectivity.

Program it with the Arduino IDE and the Cloud editor

LEARN MORE

SKU: ABX00080



ARDUINO UNO R3

A classic and widely-used board in education that's ideal for introducing students to programming, electronics, and prototyping. The UNO R3's straightforward design and robust support ecosystem make it perfect for beginners. Creating a simple LED traffic light project, for example, is a great starting point. Using three LEDs (red, yellow, and green), students can learn the basics of digital output, timing, and sequencing while building a system that mimics real-world traffic signals. With extensive online resources, a simple setup, and compatibility with numerous sensors and modules, the UNO R3 remains a cornerstone for hands-on STEM learning.

Program it with the Arduino IDE and the Cloud editor

LEARN MORE

SKU: A000066



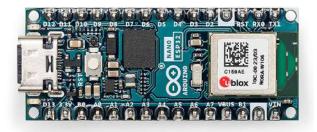
MEGA 2560 R3

The MEGA 2560 R3 is a powerful tool for education, offering plenty of input/output pins, robust processing power, and compatibility with a wide range of sensors and modules. It's perfect for hands-on projects that teach programming, electronics, and robotics, while fostering creativity and problem-solving. For example, students can use the MEGA board to build a multifeatured home security system. This type of project, which involves connecting multiple sensors for detecting motion, temperature, or door status, showcases the board's ability to handle complex setups with ease.

Program it with the Arduino IDE & Cloud Editor

LEARN MORE

SKU: ABX00067



NANO FAMILY

NANO ESP32

Offering built-in Wi-Fi and Bluetooth connectivity, the Nano ESP32 is ideal for IoT and wireless communication projects. Educators can use it to teach students how to create connected devices, such as a smart home lighting system controlled through a mobile app or voice commands. The hardware's compact size and powerful features make it a versatile choice for introducing networking and automation.

Program it with the Arduino IDE & Cloud Editor

Compatible with MicroPython, program it with the Arduino Lab for MicroPython (desktop and web version)

LEARN MORE

SKU ABX00083 (with heaaders)



NANO 33 BLE SENSE REV2

The Nano 33 BLE Sense REV2 is perfect for teaching concepts related to AI, machine learning, and environmental sensing. With onboard sensors for temperature, humidity, motion, and sound, it enables users to create innovative projects like an AI-driven gesture-controlled device or a portable air quality monitor. The board's built-in Bluetooth® capability allows for seamless integration with mobile apps, making it a practical tool for exploring real-world applications.

Program it with the Arduino IDE & Cloud Editor

LEARN MORE

SKU ABX00070 (with headers)





NANO RP2040 CONNECT

Combining affordability and performance, the Nano RP2040 Connect is an excellent choice for budget-conscious educational settings. Its dual-core processor and GPIO capabilities enable a variety of projects, such as creating a compact robotics system or a data-logging device for science experiments. Its versatility and compatibility with MicroPython and Arduino language provide a flexible learning platform for introducing programming and electronics to students of all levels.

Program it with the Arduino IDE, Cloud Editor and IoT Cloud

Compatible with MicroPython, program it with the Arduino Lab for MicroPython (desktop and web version)



SKU ABX00053 (with heaaders)



NANO EVERY

Designed for beginner-friendly and cost-effective learning. The Nano Every provides a compact platform for teaching foundational programming and electronics concepts. Educators can use it to guide students through creating simple projects like a digital thermometer with an LED display or a traffic light simulation. Its simplicity, compatibility with Arduino's extensive library ecosystem, and affordability make it an excellent tool for introducing STEM concepts.

Program it with the Arduino IDE and Cloud Editor, IoT Cloud and Arduino PLC IDE

LEARN MORE

SKU ABX00033 (with heaaders)





ARDUINO® LABS

Extend STEAM learning beyond the classroom.

An Arduino Lab is a dedicated space, whether that's in a school, university, business, or other institution, that provides innovative, exciting STEAM learning opportunities and certifications.

In an Arduino Lab, you can hold specialized STEAM courses for students, teacher training and professional development, and one-off workshops or projects. You could even open the lab to the public so that they too can learn about Arduino Education solutions, extend their STEAM knowledge - and have fun!

BENEFITS OF CREATING AN ARDUINO LAB

- Provide students with the skills they need to get career-ready
- Boost students' future skills, such as problemsolving, collaboration, and critical thinking
- Support and train educators to deliver engaging, hands-on, playful STEAM lessons with confidence
- Promote a culture of technology innovation and development
- Provide mentorship and certification programs for educators and students
- Develop design thinking, product design, and innovation skills

HOW DO ARDUINO LABS WORK?

An Arduino Lab is a space for schools, teachers, and educators to collaborate, connect, share success, and seek support.

You can host classes, teacher training sessions, professional development courses, and workshops in a space that's set up with complete Arduino Education solutions and run by people who we'll train to use and teach with Arduino products.

Additionally, having an Arduino Lab helps you connect with your local community and establish a creative hub where anyone can get hands-on with technology and drive their own STEAM learning.



TIBOT INSPIRATION LABS ARE TAKING OVER SPAIN!

TIBOT, our partner in Spain, have created two amazing Arduino Labs in the cities of Vitoria-Gasteiz and Granada.

These dedicated spaces allow teachers and students to learn with the full range of Arduino Education products, covering robotics, programming, electronics, and technology. These labs are specially designed to offer workshops, training, and support, providing short, innovative, and exciting STEAM learning opportunities that boost teachers' confidence and engage students.

Additionally, TIBOT also hosts a 'pop-up' Inspiration Lab that travels the country, offering workshops to teachers and students across Spain.

The rundown

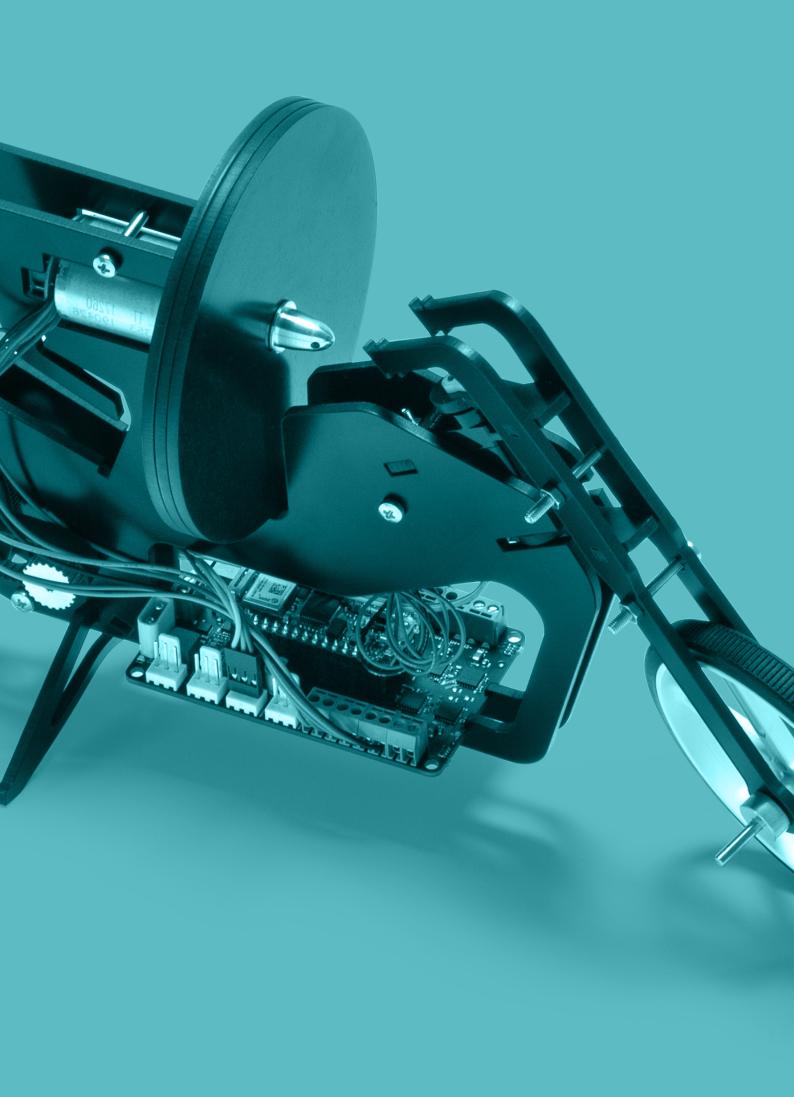
- 30 workshops in 20 cities
- 300+ teachers at the workshops
- · 30 educators have received Arduino Certification
- 13 schools are now certified Arduino Education Centers
- 17 cities visited by the pop-up Inspiration Lab

Find out more:

tibotinspirationlab.com/ilab/

TIBOT also offers certifications for centers and educational institutions. You can find out more about those here: <u>tibotinspirationlab.com/certifica-tu-centro-en-arduino-education/</u>













Internet of Things Education

The integration of the Internet of Things (IoT) into K-12 education marks a transformative step in how we approach teaching and learning in the digital age. Utilizing IoT in classrooms, especially through products like the Arduino Explore IoT Kit R2 and the Arduino Greenhouse Kit, provides students with a tangible and interactive way to understand the interconnected world of technology.

The Arduino Explore IoT Kit R2 serves as a fundamental tool in introducing students to the basics of IoT. It offers a hands-on approach to learning how everyday objects can collect, share, and use data to interact with the environment This kit allows students to build and program their own IoT devices, fostering a deep understanding of how these technologies work and their applications in real life.

Similarly, the Arduino Greenhouse Kit is an exceptional resource for teaching students about environmental monitoring and sustainable practices through IoT. By building and programming a miniature greenhouse, students learn about data collection and analysis, gaining insights into how IoT can be used in agriculture and environmental science.

A key component of these educational experiences is the Arduino Cloud for schools, which provides a platform for students to store, access, and analyze the data collected by their IoT devices. This cloud-based solution not only simplifies the data management process but also enhances the learning experience by enabling real-time data visualization and collaboration among students.

The inclusion of IoT in K-12 education, supported by tools like the Arduino Explore IoT Kit R2, Arduino Greenhouse Kit, and Arduino Cloud, is essential in cultivating a generation that is adept at using technology to solve real-world problems. It prepares students not just in understanding the mechanics of IoT, but also in appreciating its potential in shaping a smarter, more connected world. Through these immersive, hands-on experiences, students develop a blend of technical skills and critical thinking, positioning them to be the innovators and problem solvers of tomorrow.



QUICK INFO

Age: **16+**

Hours of learning 200+



Languages:

English

Italian

Spanish



ARDUINO®EXPLORE IOT KIT R2

Transform education with IoT and design thinking to solve real-world challenges.

...we had the Arduino Explore IoT Kit to help us through a transition of what we wanted to do and what we can do, and it was very easy with the help of templates on the Arduino Cloud. It is pretty spectacular when you start creating and see results.

Juan Felipe Saldarriaga, Technology Lead, San José de las Vegas School, Colombia

Medellin challenge(See page 13 Events - Medellin challenge)





KEY LEARNING VALUES

- Enhance students' understanding of real-world technology and its applications
- Learn design methodologies to research and tackle sustainability and global challenges

- Network security considerations
- Develop programming skills

HOW DOES THE KIT WORK IN YOUR CLASSROOM?

Students learn how to build internet-connected projects with easy-access getting started activities and 10 sustainability projects, supported by technical and theoretical lessons.

All projects adopt a learning-by-doing approach in which students construct fully-functional solutions that have meaningful applications.

These include:

- Energy efficiency devices
- Smart irrigation
- · Environmental quality
- Waste management systems
- · Water preservation, and more.

WHAT DOES THE KIT INCLUDE?

Hardware:

- · MKR WiFi 1010 board
- MKR IoT Carrier Rev2
- · External sensors: PIR and moisture sensors

Software:

· Arduino Cloud (see page 28)

Learning content

 Access to the Explore IoT Kit online platform and dedicated support.

For a more complete learning experience and access to the full content, educators can subscribe to the Arduino Cloud for Education School Plan (cloud.arduino.cc/plans#school). With the School Plan, you can

- Unlock 10x more content that supports students in learning coding, electronics, IoT, data literacy, and how to use Arduino components
- Improve the teacher experience by making everything simpler, shareable, and collaborative

Find out more about cloud for schools cloud.arduino.cc/schools

HIGHLIGHT:

The kit comes with a pre-uploaded program. Connect your device to the computer and start gathering data with sensors and actuators immediately.



SEE A SAMPLE LESSON HERE:

courses.arduino.cc/explore-iot/





QUICK INFO

Content for middle and high school students



Languages:

English

Italian



ARDUINO®GREENHOUSE KIT

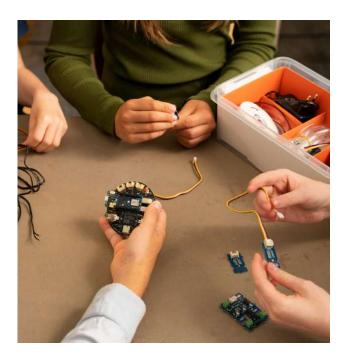
Enhance your students' understanding of real-world technology.

The Greenhouse Kit is a practical, multidisciplinary learning tool that combines IoT, agriculture, and sustainability concepts.

Being able to ask questions, to engage, to do some background research, to have an idea that you want to test out and find the answer to, to be able to collect data, communicate that data, and talk to peers - I think a project like this helps make that happen. They're out of the textbook and they're doing things hands-on, and something that's meaningful.

Dana Graha, Mechanics and Fabrication Teacher, White Mountains Regional High School, New Hampshire, US





KEY LEARNING VALUES

- Encourage collaboration and teamwork through a hands-on learning experience
- Provides multidisciplinary educational experiences around STEM
- Supports different types of learning styles
- Understand real-world applications

HOW DOES THE KIT WORK IN YOUR CLASSROOM?

Students build and control their greenhouse and learn how to collect, monitor, and analyze data from different sensors (light, humidity, temperature, moisture, CO2) in the Arduino Cloud.

They create and customize dashboards to visualize real-time or historical data. Experimenting and learning with the Greenhouse Kit is easy for younger and less experienced students. With the Arduino Cloud templates, they can receive and send data to the sensors straight away.

WHAT DOES THE KIT INCLUDE?

Hardware:

- MKR WiFi 1010 board
- MKR IoT Carrier Rev2
- Grove motor driver
- VOC, CO2, moisture, and temperature sensors
- A fan, water pump, grove cables, a LED strip, and a power plug

*Greenhouse structure is not included.

Software:

Arduino Cloud

Online learning content

 Access to the Greenhouse Kit online platform with tailored content for middle and high school students, and dedicated support.

HIGHLIGHT:

The possibilities for greenhouse-based projects are endless, whether they happen over just a few days, across a semester, or even throughout an entire school year.



SEE A SAMPLE LESSON HERE:

edu-content-preview.arduino.cc/
content-preview/high_school/lesson/
CONTENTPREVIEW+GREENHOUSE





Mechatronics and Control Engineering Education

Mechatronics and Control Engineering, vital disciplines in modern engineering education, blend elements of mechanical, electronic, computer, and control engineering. Higher education programs in these fields must provide a well-rounded curriculum that covers robotics, sensor technology, actuator design, control systems, and computer programming.

Hands-on practical experience is crucial, with labs and workshops allowing students to engage directly with real-world systems and technologies. These practical components should be designed to mimic industry challenges, fostering skills in problem-solving, innovation, and critical thinking.

An interdisciplinary approach is beneficial, integrating knowledge from related fields like computer science, electrical, and mechanical engineering, to give students a comprehensive understanding of the interconnected nature of these disciplines.

Staying abreast of technological advancements such as IoT, Al, and machine learning is essential, ensuring that students are prepared for current and future industry trends.

Industry partnerships, through internships and collaborative projects, are crucial for bridging the gap between theoretical learning and practical application. They provide students with valuable insights into industry demands and expectations.

In essence, Mechatronics and Control Engineering programs should aim to deliver a balanced mix of comprehensive academic knowledge and practical, real-world experience, preparing students for the dynamic and evolving landscape of modern engineering.



QUICK INFO

Age: **17+**

10 chapters

3 projects 3 lessons



Languages:

English

Spanish

ARDUINO®ENGINEERING KIT R2

Equip students with industry-standard tools for real-world readiness.

A practical, hands-on learning experience that helps students develop key engineering skills, and learn core aspects of mechatronics and MATLAB® and Simulink® programming.

The Engineering Kit is a well designed, innovative toolkit that enables engineering students to use industry standard software to complete interesting, engaging and relevant projects

BETT Awards winner 2020







HOW DOES THE KIT WORK IN YOUR CLASSROOM?

Students can work individually or in groups to complete the 3 guided projects. Students have also the freedom to experiment, design, and develop new solutions using the software and hardware components in the kit. This helps students to learn valuable career skills they'll use in the future.

KEY LEARNING VALUES

- System modeling
- Control theory
- Robotics and mechatronics
- ✓ Text-based programming with MATLAB®
- Visual programming with Simulink®
- ✓ Model and simulate behavior of dynamic systems



WHAT DOES THE KIT INCLUDE?

Hardware:

- Nano 33 IoT board
- Nano Motor Carrier
- Electric components
- Assembly pieces

Software:

- MATLAB® (1 year trial)
- Simulink® (1 year trial)

Learning content

 Access to the Engineering Kit R2 online platform, and dedicated support

HIGHLIGHT:

Designed in collaboration with MATLAB® & Simulink®



SEE A SAMPLE LESSON HERE:

edu-content-preview.arduino.cc/ content-preview/university/project/ CONTENTPREVIEW+AEKR2



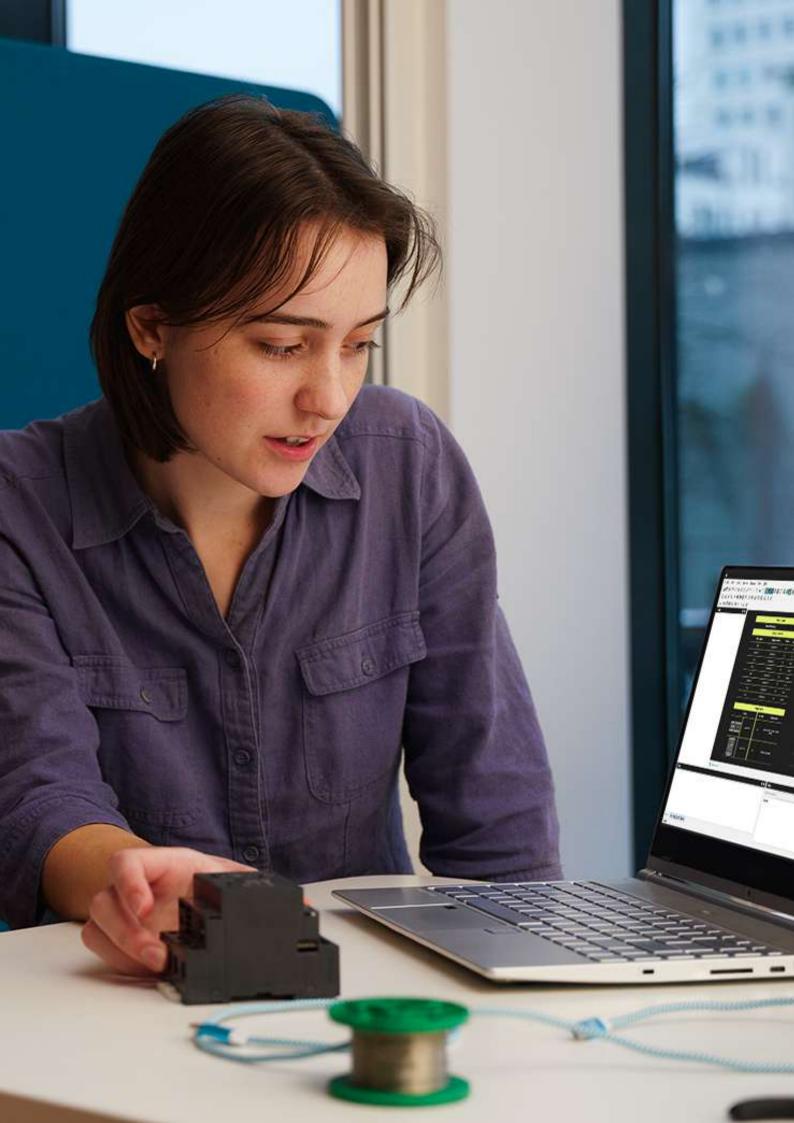
Industry automation Education

The rise of Industry 4.0, driven by technologies like AI, IoT, and robotics, necessitates the evolution of higher education to meet the demands of workforce development. Educational programs must integrate Industry 4.0 concepts, equipping students with practical skills for a digitized industrial environment and bridging the gap between academic learning and real-world application.

These programs should focus on technical skills in emerging technologies while fostering innovation, critical thinking, and problem-solving abilities. An interdisciplinary approach is vital, blending engineering, computer science, and business to provide a holistic understanding of the industrial landscape.

Emphasizing adaptability and lifelong learning is key, as the rapid pace of technological change requires a workforce that continually updates its skill set. Collaboration with industry partners ensures curricula remain relevant and aligned with current industry needs, offering students practical experience and a smoother transition into the workforce

In summary, adapting higher education to include Industry 4.0-focused programs is crucial for preparing a skilled, adaptable workforce. This approach is essential for the ongoing competitiveness and innovation of industries in the global market.





QUICK INFO

Age: 17+

10 chapters

30 hours of learning activities

No. of students per kit: 3 students

Languages:

English

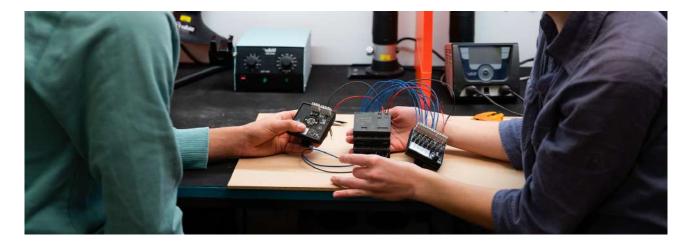
Italian

ARDUINO® PLC STARTER KIT

Plug into the Future of Industrial Automation

The Arduino PLC Starter Kit is a robust, beginner-friendly solution that introduces users to industrial automation and control systems. It bridges the gap between basic electronics and advanced PLC (Programmable Logic Controller) applications using Arduino's ecosystem. It provides comprehensive learning tools to build and program automation systems while addressing real-world challenges.







WHAT DOES THE KIT INCLUDE?

Hardware:

- Opta WiFi
- Power board/supplier
- Digital input simulator
- PID test board
- DIN Rail mountable

Software:

Arduino PLC IDE

Learning content

 Access to the Explore PLC online platform and dedicated support.

DISCOVER THE PLATFORM

KEY LEARNING VALUES

- Gain foundational knowledge in Opta WiFi operations and develop career-ready skills in industrial automation.
- Fosters innovation, problem-solving, and adaptability, using proven tools in the field.
- Offers a quick, easy software development with PLC code examples like Ladder Diagrams, Structured Text, and Functional Blocks.





Machine Learning and Artificial Intelligent Education

The integration of Machine Learning (ML) and Artificial Intelligence (Al) into higher education is essential to prepare students for a technology-driven future. As Al and ML increasingly influence various sectors, there is a growing need for skilled professionals knowledgeable in these areas. Higher education programs must therefore encompass both theoretical and practical aspects of ML and Al.

Such programs should cover foundational theories in computer science and mathematics, alongside practical applications like data analysis, neural networks, and algorithm design. This comprehensive approach ensures students gain a deep understanding of Al and ML technologies and their applications.

Critical thinking and ethical considerations are crucial in ML and AI education, preparing students to develop responsible AI solutions with an awareness of societal impacts. An interdisciplinary approach, integrating insights from psychology, philosophy, and business, can enrich students' understanding of AI and ML's real-world applications.

Practical experience, facilitated through industry collaborations, is vital for students to apply their learning in real-life scenarios. These partnerships can offer internships and projects that enhance learning and prepare students for the workforce

Incorporating ML and AI into higher education is not only about aligning with current industry demands but also about equipping students with the adaptability and lifelong learning skills necessary to navigate future technological advancements. This approach is key to developing professionals capable of contributing to and shaping the evolving landscape of AI and ML.



QUICK INFO

Age: **18+**

Languages:

English



ARDUINO®TINY MACHINE LEARNING KIT

Bring your machine learning visions to life.

The Tiny Machine Learning Kit, combined with the TinyML Applications and Deploying TinyML on Microcontrollers courses that are part of the Tiny Machine Learning (TinyML) specialization from EdX, will equip you with all the tools students need to bring their ML visions to life.

The Future of Machine Learning is Tiny and Bright. We're excited to see what you'll do!

Prof. Vijay Janapa Reddi, Harvard University and Pete Warden, Google.





KEY LEARNING VALUES

- Fundamentals of machine learning, deep learning, and embedded devices
- How to gather data effectively for training machine learning models
- How to use Python® to train and deploy tiny machine learning models
- How to optimize machine learning models for resource-constrained devices
- How to conceive and design your own tiny machine learning application

WHAT DOES THE KIT INCLUDE?

Hardware:

- Nano 33 BLE Sense, equipped with sensors to detect color, proximity, motion, temperature, humidity, audio, and more
- A camera module (OV7675)
- Custom Arduino Tiny Machine Learning Shield to attach components and create unique TinyML projects

Software:

- TensorFlow[™] Lite for Microcontrollers to run machine learning models on microcontrollers
- Arduino IDE, including a library available for TensorFlow[™] Lite with four examples showing how to run speech, accelerometer, and image machine learning on a microcontroller.

Online learning content:

- · Access to The Future of ML is Tiny and Bright course.
- A Professional Certificate program is offered by Harvard University and Google TensorFlow™.
 Students will learn about the emerging field of Tiny Machine Learning, its real-world applications, and the future possibilities of this transformative technology.

THE PROGRAM IS DIVIDED INTO 3 COURSES:

- 1 Fundamentals of TinyML and deep learning
- 2 Applications of TinyML
- 3 Deploying TinyML

Note that this content is offered by Harvard University and Google's TensorFlow™ team. It does not include Arduino Education content.

HIGHLIGHT:

Winner CogX awards 2021.

Outstanding Research Contribution in Al - Best course in Al

edX: "The Future of Machine Learning is Tiny and Bright"











OPTA FAMILY

OPTA WIFI

Ideal for teaching advanced IoT and industrial automation concepts, this board combines microcontroller flexibility with industrial-grade features. Its built-in Wi-Fi connectivity enables educators to demonstrate real-world applications such as remote monitoring and control of factory equipment or energy systems. Students can create a smart energy monitoring system that tracks power consumption in real-time and sends alerts to a mobile app. The Opta WiFi's reliability and focus on IoT applications make it a powerful tool for bridging classroom learning and industrial practices.

Program it with the Arduino IDE, Cloud Editor, IoT Cloud and Arduino PLC IDE, including LD (Ladder Logic Diagram) and FBD (Function Block Diagram).

LEARN MORE

SKU: AFX00002



OPTA RS485

Tailored for teaching industrial communication and networking, this board is equipped with RS485 for integration into Modbus and other industry-standard protocols. Educators can guide students in building projects such as a distributed temperature control system for a smart building, with sensors and devices communicating over RS485. The Opta RS485 is an excellent introduction to automation and real-world industrial applications, helping students understand critical concepts like data acquisition and control.

Program it with the Arduino IDE, Cloud Editor and Arduino PLC IDE including LD (Ladder Logic Diagram) and FBD (Function Block Diagram).

LEARN MORE

SKU: AFX00001



OPTA LITE EXPANSION MODULES

Designed to enhance the functionality of the Opta family and provide a modular approach to teaching industrial control and system expansion. Educators can use these modules to demonstrate how to extend the capabilities of automation projects, such as adding additional input/output points or integrating specialized sensors. By unlocking new possibilities, they make the Opta family a versatile platform for exploring customized solutions for industrial and IoT-focused challenges in STEM education.

Opta digital expansions are available in two variants:

ARDUINO PRO OPTA EXT D1608S

SKU: AFX00001

ARDUINO PRO OPTA EXT D1608E

LEARN MORE

SKU: AFX00005

Program it with the Arduino IDE, IoT Cloud, and Arduino PLC IDE



NICLA FAMILY

NICLA VISION

A compact, powerful tool for teaching machine vision and edge Al concepts. Equipped with a camera and onboard processing, the Nicla Vision enables students to explore real-time image recognition and object detection. For example, educators can guide students in creating a smart security system that identifies objects or intruders and sends alerts. Its portability and advanced features make it ideal for introducing computer vision and Al applications.

Compatible with all Arduino Portenta and MKR products, fully integrates with OpenMV, supports MicroPython and also offers both WiFi and Bluetooth® Low Energy connectivity.

Program it with the Arduino IDE, Cloud Editor, IoT Cloud and Open MV

LEARN MORE

SKU ABX00051



NICLA SENSE ME

Perfect for teaching sensor integration and loT applications thanks to its built-in motion, environmental, and sound sensors. The Nicla Sense ME allows students to develop projects such as wearable devices that track activity levels or monitor environmental conditions. Its small size and versatility enable educators to demonstrate concepts ranging from health monitoring to industrial sensing in a hands-on manner.

Program it with the Arduino IDE and Cloud Editor

LEARN MORE

SKU ABX00050



NICLA VOICE

Specializes in teaching speech recognition and audio-based Al. With its ability to process voice commands and sound data, students can create innovative projects like voice-activated home automation systems or noise-detection devices. Its focus on audio processing makes the Nicla Voice an excellent introduction to natural language processing and Aldriven interaction.

Program it with the Arduino IDE and Cloud Editor

LEARN MORE

SKU ABX00061





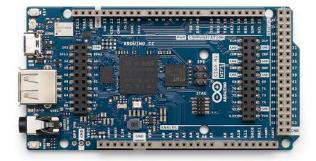
NICLA SENSE ENV

Designed for environmental monitoring, the Nicla Sense ENV is ideal for teaching IoT-based sustainability and environmental science concepts. Equipped with sensors for temperature, humidity, pressure, and air quality, students can build projects like a portable air quality monitor or a smart weather station. Its compact design and high precision allow educators to connect classroom learning to real-world environmental challenges.

Program it with the Arduino IDE and Cloud Editor

LEARN MORE

SKU ABX00089



GIGA FAMILY

GIGA R1 WIFI

Offers advanced processing capabilities, numerous input/output pins, and built-in compatibility with displays for creating interactive projects. Its robust performance allows educators to teach concepts like IoT, robotics, and real-time data visualization. The board's ability to handle complex tasks and its user-friendly ecosystem make it an ideal platform for both beginners and advanced learners, expanding possibilities in STEM education.

With its high performance dual-core microcontroller and integrated Wi-Fi/Bluetooth connectivity, the GIGA R1 supports complex projects like robotics, data analysis, and smart systems. Ideal for classrooms, it enables students to explore real-world applications in STEM, fostering innovation and hands-on learning.

Program it with the Arduino IDE, Cloud Editor and IoT Cloud

LEARN MORE

SKU ABX00063



GIGA DISPLAY SHIELD

Enhances education by providing an intuitive, touch-enabled interface for projects with the Arduino GIGA R1 WiFi. The Display Shield allows students to design interactive displays for applications like IoT dashboards, control panels, and data visualization. This hands-on tool helps learners bring their ideas to life while building skills in programming, UI design, and real-world problem-solving. For example, students can build a robot with a touchscreen control panel and then program and control the robot's movements, sensors, and actions directly through the display.

LEARN MORE

SKU ASX00039



GIGA DISPLAY BUNDLE

The Arduino GIGA Display Bundle, comprising the GIGA R1 WiFi board and GIGA Display Shield, is a powerful tool for interactive STEM learning. With its touch-sensitive screen, built-in microphone, 6-axis IMU, and camera compatibility, students can create smart dashboards, data visualizations, or IoT systems for environmental monitoring, robotics, or real-time data logging. The bundle's ease of use and compatibility with the Arduino IDE platform make it ideal for fostering creativity and hands-on learning.

SKU ASXOO039





PORTENTA FAMILY

PORTENTA H7

A high-performance board designed for teaching advanced topics like Al, IoT, and edge computing. With its dual-core architecture, the Portenta H7 supports complex applications such as real-time data analysis and machine learning. Educators can use it to guide students in building a predictive maintenance system that analyzes data from sensors to detect equipment faults before they occur. Its powerful processing capabilities and versatility make it ideal for bridging education and professional-grade applications.

Program it with the Arduino IDE, Cloud Editor, IoT Cloud and Open MV

LEARN MORE

SKU ABX00042



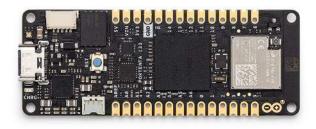
PORTENTA X8

Tailored for teaching industrial IoT and Linux-based edge computing. With its hybrid microcontroller and Linux processor, students can work on sophisticated projects like a multi-protocol gateway for smart factories, integrating sensors, cloud platforms, and industrial protocols. The board's ability to handle demanding tasks makes it an excellent platform for advanced STEM education, preparing students for industry-relevant challenges.

Program it with the Arduino IDE and Linux

LEARN MORE

SKU ABX00049



PORTENTA C33

A cost-effective entry point into the Portenta family, enabling educators to introduce students to IoT and real-time processing. For example, students can create an automated irrigation system that collects and analyzes data from soil sensors and adjusts watering schedules. The Portenta C33's balance of performance and affordability makes it a practical tool for diverse educational environments.

Program it with the Arduino IDE, Cloud Editor and IoT Cloud

LEARN MORE

SKU ABX00074



PORTENTA MACHINE CONTROL

A versatile tool offering hands-on learning in automation, IoT, and industrial technology. Its robust design makes it ideal for teaching students how to control and monitor machines. With features like real-time data processing, connectivity options, and support for advanced programming, this control unit bridges the gap between theoretical knowledge and real-world applications. Educators can use it to demonstrate concepts in robotics, smart systems, and industrial automation, preparing students for careers in engineering and technology.

Program it with the Arduino IDE, Cloud Editor, IoT Cloud and PLC IDE

LEARN MORE

SKU AKX00032



PORTENTA HAT CARRIER

Enhances learning by providing a modular platform for prototyping and developing IoT and AI applications. Designed for use with the Portenta boards, this robust carrier allows students to integrate multiple peripherals and sensors seamlessly. Its adaptability makes it perfect for exploring topics like edge computing, smart devices, and AI-driven systems. The Portenta Hat Carrier empowers students to build and test innovative projects, fostering creativity and practical understanding of modern technology trends.

Program it with the Arduino IDE, Cloud Editor, IoT Cloud and Linux

LEARN MORE

SKU ASX00049





UNO FAMILY

UNO R4 WIFI

Equipped with enhanced processing power and builtin Wi-Fi® / Bluetooth® connectivity, the UNO R4 WiFi board bridges the gap between beginner-friendly design and advanced IoT capabilities. Its robust performance and ease of use make it an excellent choice for educators and students exploring wireless communication and automation. The UNO R4 WiFi includes a fully-addressable LED matrix (12x8 matrix) and Qwiic I2C connectors, which allow users to connect multiple plug and play connectors without the need for soldering. Students can create, for instance, a remote temperature logger using a temperature sensor to collect data on the Arduino Cloud, allowing realtime monitoring and analysis. This project combines programming, sensor integration, and IoT concepts in an accessible and practical way.

Program it with the Arduino IDE and the Cloud editor

LEARN MORE

SKU: ABX00087



UNO R4 MINIMA

The UNO R4 Minima offers powerful processing capabilities in a cost-effective and compact design, making it perfect for students and educators starting with advanced microcontroller projects. Its simplicity and versatility allow for seamless integration with sensors and actuators. A great option for learning coding, hardware basics, robotics and creating small-scale projects that don't require wireless connectivity.

Program it with the Arduino IDE and the Cloud editor

LEARN MORE

SKU: ABX00080



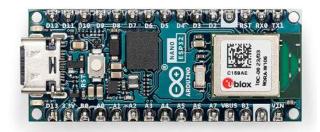
ARDUINO UNO R3

A classic and widely-used board in education that's ideal for introducing students to programming, electronics, and prototyping. The UNO R3's straightforward design and robust support ecosystem make it perfect for beginners. Creating a simple LED traffic light project, for example, is a great starting point. Using three LEDs (red, yellow, and green), students can learn the basics of digital output, timing, and sequencing while building a system that mimics real-world traffic signals. With extensive online resources, a simple setup, and compatibility with numerous sensors and modules, the UNO R3 remains a cornerstone for hands-on STEM learning.

Program it with the Arduino IDE and the Cloud editor

LEARN MORE

SKU: A000066



NANO FAMILY

NANO ESP32

Offering built-in Wi-Fi and Bluetooth connectivity, the Nano ESP32 is ideal for IoT and wireless communication projects. Educators can use it to teach students how to create connected devices, such as a smart home lighting system controlled through a mobile app or voice commands. The hardware's compact size and powerful features make it a versatile choice for introducing networking and automation.

Program it with the Arduino IDE & Cloud Editor

Compatible with MicroPython, program it with the Arduino Lab for MicroPython (desktop and web version)



SKU ABX00083 (with heaaders)



NANO 33 BLE SENSE REV2

The Nano 33 BLE Sense REV2 is perfect for teaching concepts related to AI, machine learning, and environmental sensing. With onboard sensors for temperature, humidity, motion, and sound, it enables users to create innovative projects like an AI-driven gesture-controlled device or a portable air quality monitor. The board's built-in Bluetooth® capability allows for seamless integration with mobile apps, making it a practical tool for exploring real-world applications.

Program it with the Arduino IDE & Cloud Editor

LEARN MORE

SKU ABX00070 (with headers)



NANO RP2040 CONNECT

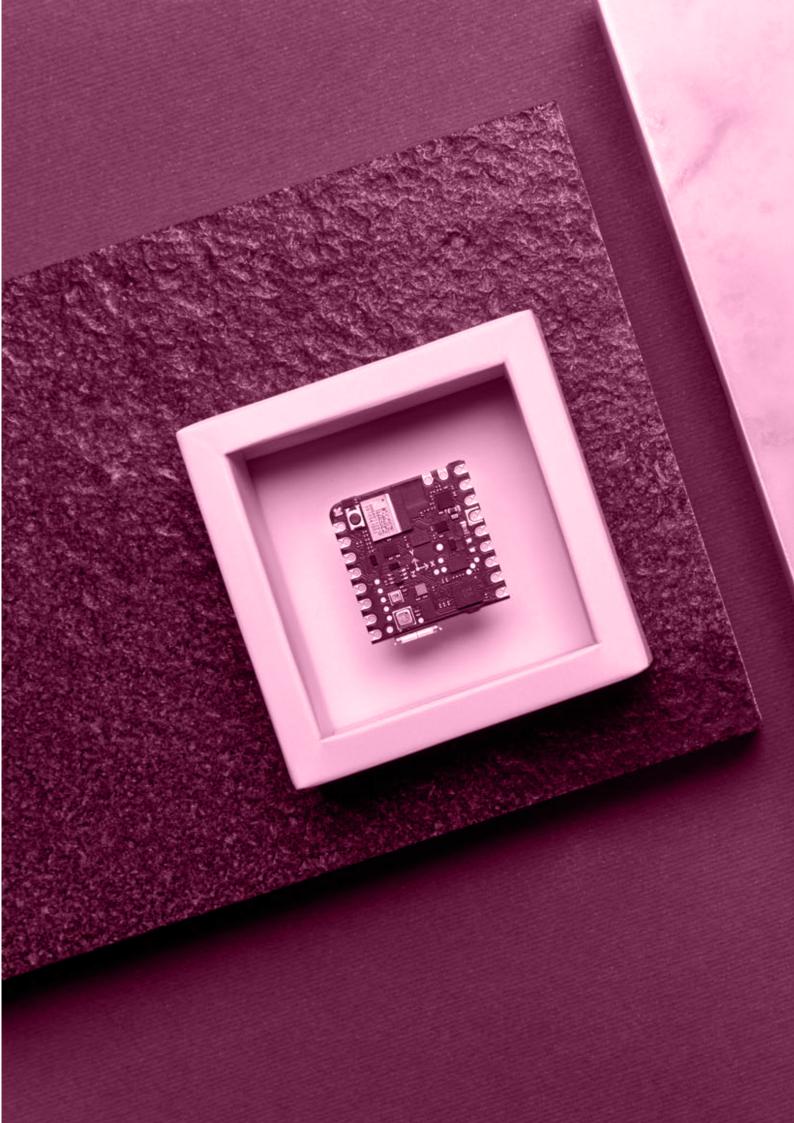
Combining affordability and performance, the Nano RP2040 Connect is an excellent choice for budget-conscious educational settings. Its dual-core processor and GPIO capabilities enable a variety of projects, such as creating a compact robotics system or a data-logging device for science experiments. Its versatility and compatibility with MicroPython and Arduino language provide a flexible learning platform for introducing programming and electronics to students of all levels.

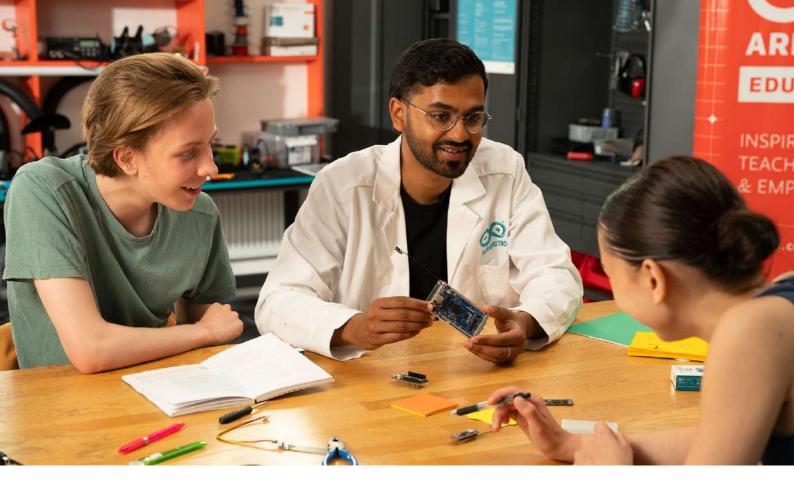
Program it with the Arduino IDE, Cloud Editor and IoT Cloud

Compatible with MicroPython, program it with the Arduino Lab for MicroPython (desktop and web version)

LEARN MORE

SKU ABX00053 (with heaaders)







ARDUINO® LABS

Empowering Future Talent with Arduino Labs

Arduino Labs is a transformative initiative that propels institutions and students into the forefront of educational excellence. By offering a seamless blend of cutting-edge technology, affordability, and skill-oriented solutions, this program creates a dynamic learning environment that fosters innovation, prepares students for successful careers, and positions institutions as leaders in shaping the future of education.

Arduino Labs address the growing demand for a workforce with practical skills in areas such as robotics, automation, and Internet of Things (IoT). This not only enhances the employability of graduates but also contributes to the institution's reputation as a provider of relevant, industry-aligned education.

The Arduino Labs are spaces designed to empower institutions and students alike, offering cutting-edge, affordable, and skill-oriented solutions that bridge the critical gap between education and career readiness.





BENEFITS

- Cutting-Edge Technology: Arduino Labs expose students to the latest advancements in electronics, programming, Al and IoT.
- Affordability: The program provides cost-effective educational kits without compromising quality.
- Hands-On Learning: Students gain practical skills, seamlessly transitioning to industrial-grade hardware.
- Thought Leadership: Institutions adopting the program position themselves as educational innovators, fostering creativity and critical thinking.
- Industry Alignment: Addressing the demand for practical skills, the labs enhance graduates' employability in fields like robotics.
- Competitive Advantage: Students acquire a competitive edge with hands-on experience, boosting confidence in real-world scenarios.

EMPOWER SCIENTISTS AND ARTISTS OF THE FUTURE



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"Arduino gives students exactly the number of bits that they need and in class we talk about digital conversion and precision, and they're seeing this in Arduino code directly in a very simple way. It actually gives them experience with a lot of things that we otherwise hadn't covered."

Herschel Pangborn, Assistant Professor, Department of Mechanical Engineering, The Pennsylvania State University.

ARDUINO.CC/EDUCATION