UNIVERSAL ROBOTS

Education Program

Empowering tomorrow's workforce

Accelerate careers in manufacturing

Manufacturing is changing faster than ever, and today's students need to master new technologies to prepare their careers. These technologies redefine ways of working in every industry and generates millions of new job opportunities along the way.

Without professionals specialized in different fields of automation, these industries will not grow to their potential. Offering students skills in manufacturing and automation does more than create exciting education experiences – it is essential for the global economy too.

Accelerate your students' careers in manufacturing by building their skills to deploy, program, and operate robotic systems and automation. Our Education Program puts a cutting-edge collaborative robot (cobot) in your classroom, ensures full certification of your teachers and delivers a course curriculum specifically designed through our UR Academy by our expert team of robotics instructors.

We will help your public or private school, college or university embrace the changing world of work and give your students hands-on experience of designing, implementing and maintaining robotics and automation solutions. Our quality training is adapted to the changing challenges of Industry 4.0 and the needs of tomorrow's employees in the industrial sector.

In 2008, we pioneered the first commercially viable lightweight collaborative robots. They are flexible, simple to program and laid the foundation for affordable automation for companies of all industries and sizes. Our cobots free employees from dangerous, dirty and dull tasks, and help boost business productivity. Today, over 50,000 of our cobots work side-by-side with humans around the world.

Sign up to the Education Program:
universal-robots.com/education

“Cobots are perfect in teaching environments, not just for safety reasons but also because of their easy programming software and flexible approach.”

Giacomo Palmieri
Professor, Università Politecnica delle Marche, Italy

The Universal Robots Education Program: What We Offer

Our robotics program brings collaborative robotics to life in your class-rooms. It gives your students hands-on, practical experience of designing, implementing and maintaining the kind of automation solutions that are redefining the world of work today.

The modular program contains everything you need to start delivering innovative and effective robotics courses:

Cobot & Hardware

Place innovative cobot technology into the hands of your students. Choose from a selection of UR recommended accessories like grippers, conveyors, sensors, and training parts to simulate different industrial environments and enable diverse reserach and education needs.

LMS & Curriculum

We provide a range of industry leading training content, including course materials that address core competencies around robotics and automation, practical work and exercises, exams and solutions for teachers to track student performance. This content is accessed and managed through UR's Learning Management System (LMS) for easy course delivery and management.

> **“The collaborative robots are benefitting our learners, the college and local manufacturers as we look to upskill and increase opportunities for the valued manufacturing workforce in the UK.”**

Barry Skea
Head of Science & Technology, New College Lanarkshire, UK

Software

Time in the classroom is precious, therefore ease of use is critical when introducing students to a new technology. UR’s Polyscope provides an intuitive programming interface for beginner to advanced users. Enable teaching in the classroom with URSim and compatible UR+ partner software platforms.

Teacher Training & Certification

Our specialized teacher training program provides teachers with the opportunity to gain knowledge and confidence in robotics use and application in industry. Through the program, teachers become certified to train and certify their students with an industry recognized certification from UR.

Cobot & Hardware

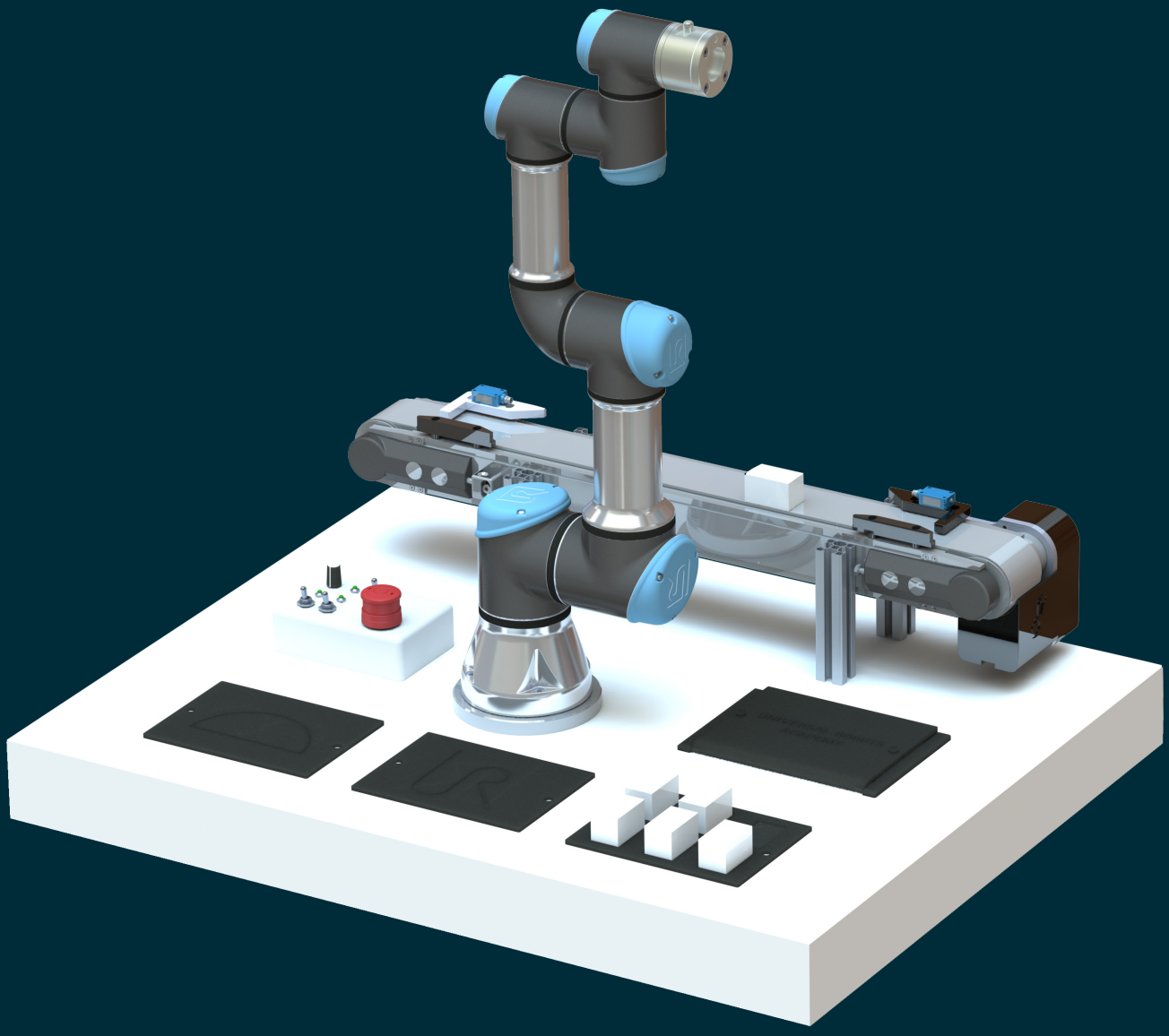
Robotics isn't something abstract to be studied from a distance – it's something that requires hands-on experience, experimentation and play. That's why UR's modular hardware package makes it easy to reproduce a variety of common robot deployments in your learning environment. UR's hardware enables schools to teach technical knowledge about automation with practical and contextualized learning outcomes.

"Students are eager to get their hands on a robot and play with it. They appreciate the easy setup – as well as how easy they can then attach their own hardware or software developments to it."

Christian Schlette
Professor, Vice section head, SDU Robotics, Denmark

Each hardware kit contains:

- A cobot from the UR portfolio:
  UR3e,UR5e, UR10e, UR16e, UR20, UR30
- A conveyor belt with corresponding sensors
- 3D printed training plates for simulating different applications
- An I/O simulator for digital inputs, outputs, and safety inputs
- Gripper of choice from the UR+ ecosystem of partners
- Other peripheral devices and accessories from the UR+ partners to meet your unique education goals



> **“In my opinion, the ability to connect the cobot with any other device, real or simulated, makes students customize the work they want to do, which increases their motivation.”**

Jose Maria Sabater Navarro
Teacher, Catedrático de Universidad, Universidad Miguel Hernández de Elche, Spain

Collaborative robots are designed to transform manufacturing and production environments. They are also transformative tools for the classroom.

Fit for classrooms

UR’s robot arms are designed to automate in tight spaces. We’ve removed many pinch points found in traditional robots, and our lightweight, small-footprint robot arms minimize the risks of working with robots in group settings, often eliminating the need for costly safety fencing required with traditional industrial robots. The Universal Robots e-Series also runs on standard 110 volt power, making it easy to move a cobot station between classrooms or across campus.

Modular flexibility:

Build a flexible education solution that meets local industry needs and changes with them. Through the UR+ ecosystem, add on components and accessory kits to expand your teaching capabilities to meet beginner to advanced education needs.

Minimal maintenance

UR’s cobot joints are sealed, self-contained, and self-lubricated for life, meaning teachers and students can focus on learning year after year and not on equipment maintenance.

Ease of use

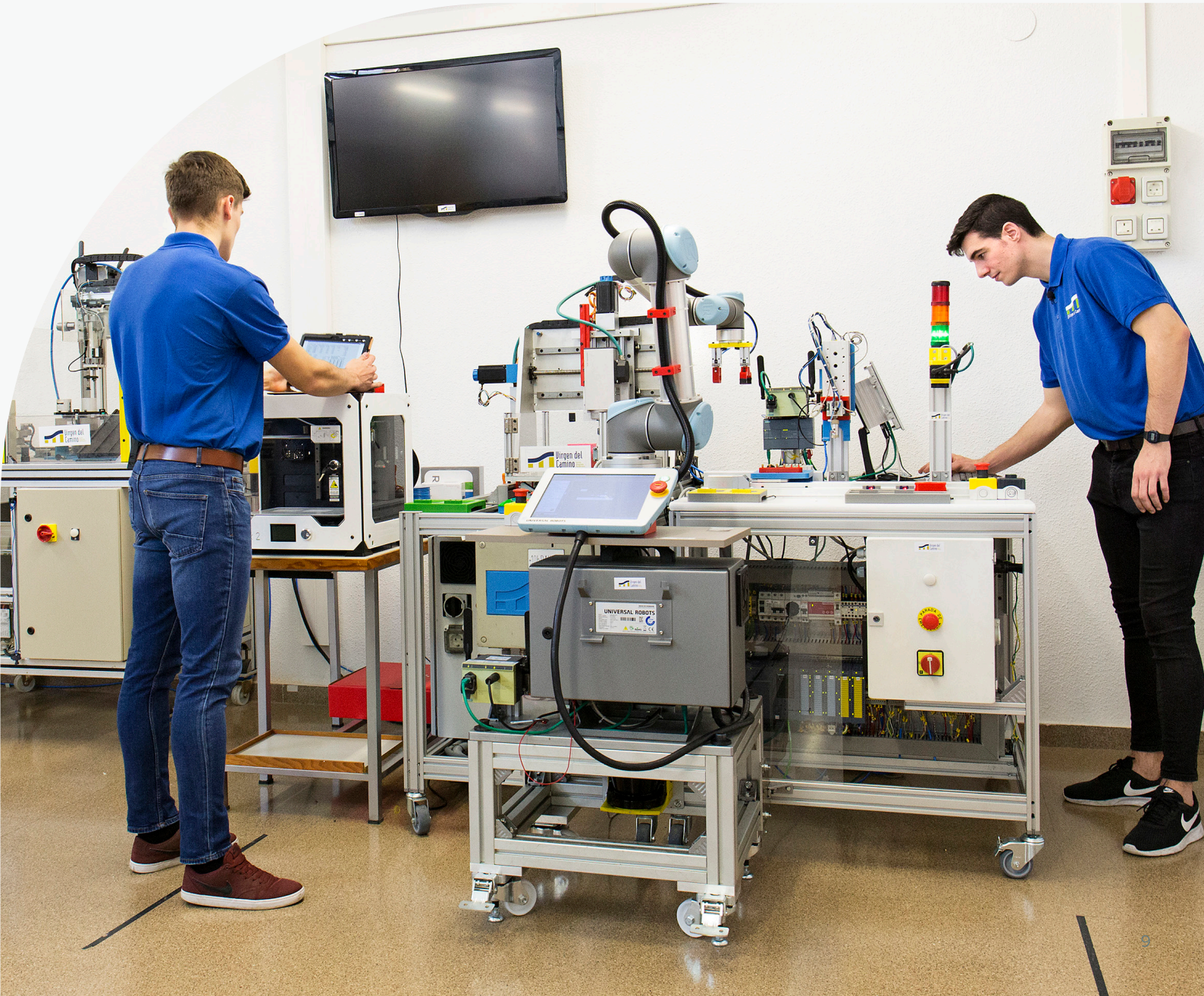
Powered by UR’s in-house developed software, Polyscope, programming robots has never been easier. The touchscreen teach pendant provides an interactive and intuitive interface for programming. Whether you are a beginner or an expert, users appreciate the real time interactive 3D models, program logic, and wizards. Not to mention Polyscope updates are free for life, so your students always have access to the latest software.

Industry quality solutions

Teach students on the technology used by industry to best prepare them for the modern workplace. UR is one of the original pioneers of cobot technology, and has remained as one of the most trusted cobot brands on the market.

“Having modern technology, such as robots, available at our university allows students to be trained in a field that is in high demand and it allows companies to use the university as a robotics training facility for their own staff.”

Thomas Carron
Student, France



Software

Polyscope

An intuitive programming interface for first time robotics users, and deep functionality & features for advanced applications.

- **Node programming** - visualize the program through a tree diagram. Add icon represented elements to define motions, waypoints, and commands.
- **Free Drive** - interact with the robot by manually moving the arm to the perfect position to define waypoints
- **Safety features** - use one of the preset safety configurations or customize using the safety toolbox
- **Force Sensor** - program the robot to move to a user defined force using the integrated torque sensor
- **UR Caps** - add advanced functionality into Polyscope for components and applications. Develop your own or access the library of UR Caps available through our UR+ partners.
- **UR Script API** - a python based script language allowing users to write advanced functions.

URSim

While UR prioritizes hands-on experience, we also know that classroom time can be limited for students. UR's free offline simulator enables writing and testing of programs away from the robot. The programs created in URSim on a PC can be transferred to the cobot and tested in real-life.

ROS/ROS2

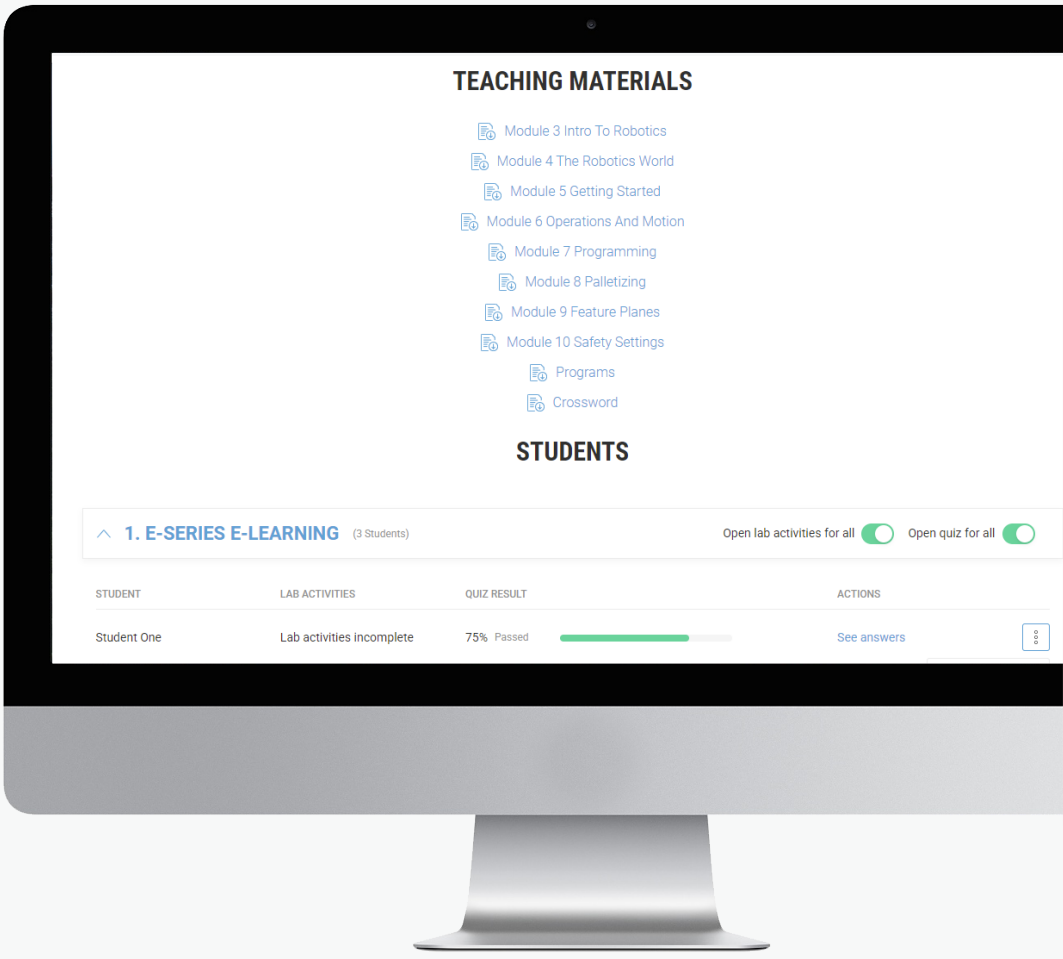
ROS is an open-sourced framework that provides different sets of software libraries and tools that help build advanced robot applications. Universal Robots officially provides and supports drivers for ROS and ROS2. ROS contains building blocks that can be utilized to develop your applications. These four blocks work together to help you reach your goals.

“It’s quite ergonomic, like a phone app for example. I am familiar with all programming, scripting, where you work step by step. On the cobot, we program the steps, movement, gripping systems, etc... It’s quite interesting. It’s much easier and faster to implement than traditional robots.”

Thibault Tunzin
Bachelor student, BTS, lycée Pierre-Emile Martin, France

Learning Management System (LMS) & Curriculum

Teachers to access teaching material and follow the progress of students enrolled in the class.

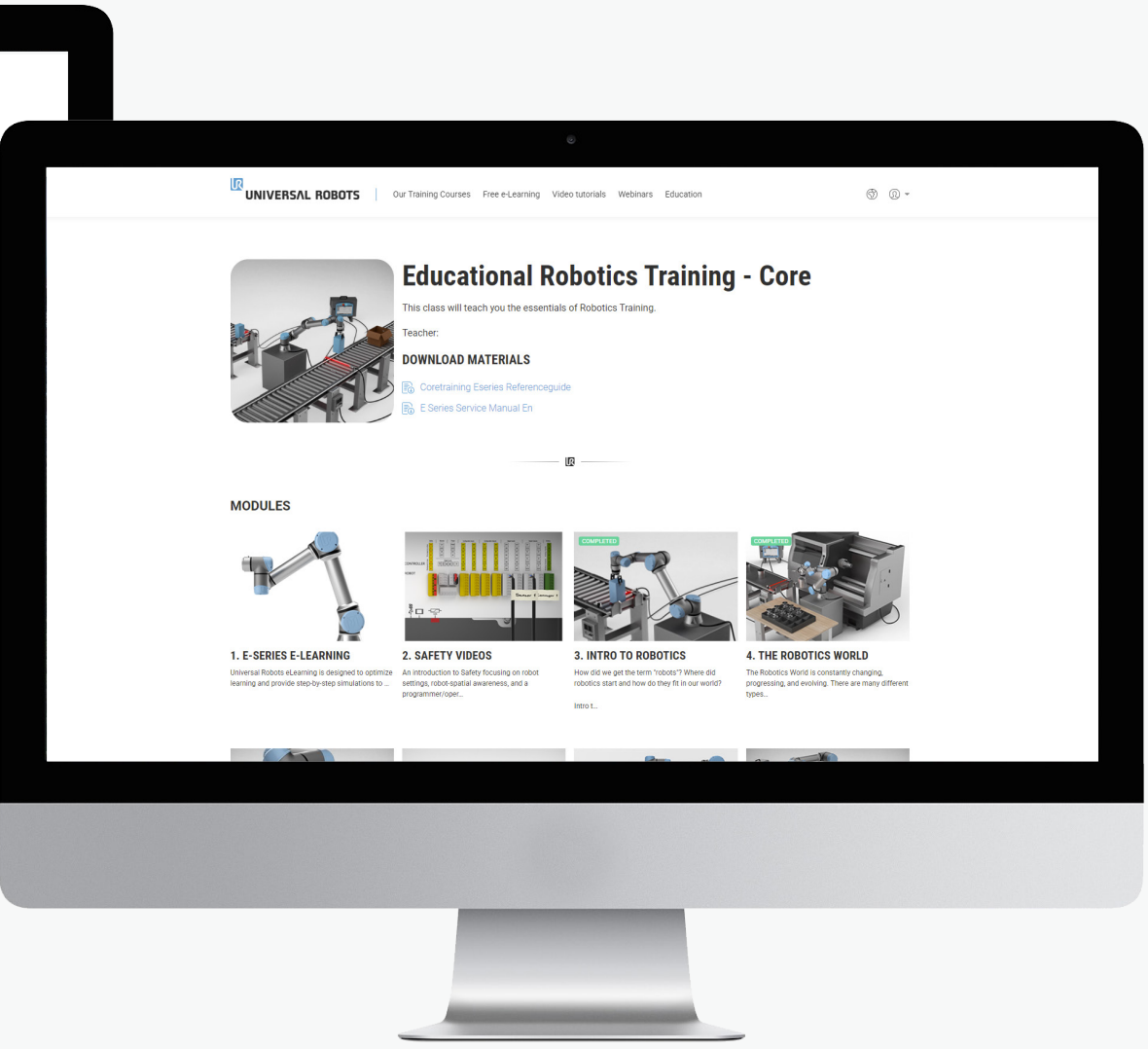


In addition to the UR Academy free e-learning content, UR offers educators an in-house Learning Management System (LMS) – a product exclusively developed to support our customers in education. The LMS provides a web-based platform for teachers & students to access and manage learning content.

Its features include:

- Create classes with start/end date duration
- Assign learning modules to students
- Student and teacher access to training materials and lab activities
- Monitor modules, student progress, and knowledge checks
- Traceable certification of successful students

The UR Academy team is continually updating and adding more features and content to the LMS platform to ensure schools, teachers, and students are provided with industry relevant knowledge.



Students to see their available training modules and their progress.

Curriculum

We want to make it as simple as possible for you to show your students the possibilities that robotics and cobots offers them and the companies they build their careers with too. That is why we'll provide modular training materials you need to deliver the course. This includes lecture slides, guided student activities, quizzes and examinations.

"The Academy has added a considerable number of resources over the past few years. The online access, Power Point Presentations, quizzes, videos, notes and the labs that integrate the UR platform online and in the remote academies is awesome. The video tutorials are another excellent resource to use in the classroom."

Nils Anderson
Robotics Instructor, ONC BOCES, USA

Online Training

The Universal Robots Online Academy helps you integrate robotics education into your learning environment in an engaging and intuitive way.

The 14 modules cover everything from configuring end effectors, connecting inputs and outputs, creating basic programs, and applying safety functions to a robotic process. The online modules support your teaching in the classroom or lab and facilitate educators and students to learn in parallel with both real and virtual robots.

Module 1
The robot at a glance
7 min

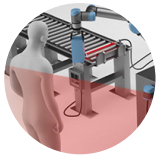
Module 2
Preparing a task
6 min

Module 3
Tool setup
17 min

Module 4
Creating a program
12 min

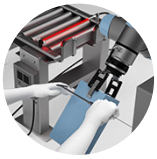
Module 5
Interaction with external devices
11 min

Module 6
Controlling conveyors
10 min



Module 7
Safety settings
15 min

Module 8
Optimization
6 min

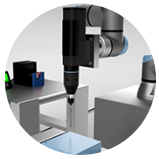


Module 9
Program flow
16 min

Module 10
Coordinate systems
13 min

Module 11
Force control
12 min

Module 12
Palletizing
15 min

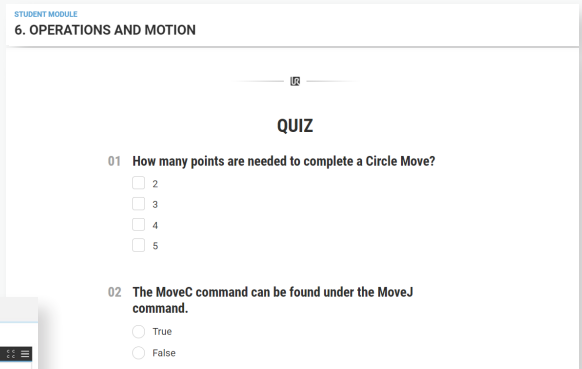


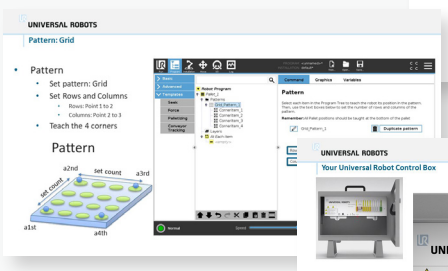
Module 13
Screwdriving
13 min

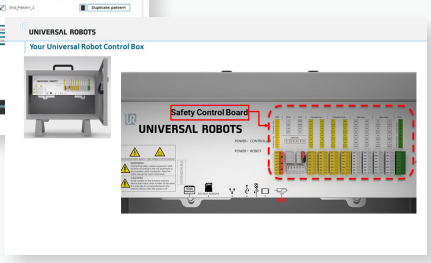
Module 14
Machine loading
25 min

Hands-on activities and quizzes

All activities are designed to replicated real-world scenarios and cobot applications to make sure your students are as prepared as possible for their future careers. Lab activities include focused quiz at the end to make sure that your students are getting the most out of the course.







“I attended a train-the-trainer remote learning course where the trainer showed me all the capabilities of UR Academy. I am thoroughly impressed with the quality of the training materials that I received.”

Adam Paisie
Robotics & Automation Instructor, Delaware, USA

Teacher Training & Certification

The UR Education Program provides educators with the opportunity to upgrade their knowledge and teaching skills. Understanding that our customers in education have different needs from industry, the teacher training course is designed to help teachers to become cobot experts fast. The training is structured into a 2-part training course for a total of 4 training days:

- 2 days UR Core Training - completed online or in person – the industry recognized technical training offered to all UR customers
- An additional 2 days of Teacher Training - completed online or in person – an exclusive class offered to educators who want to deepen their knowledge of robots and sharpen their teaching skills. Delivered by a certified UR trainer, teachers are coached on how to use and teach the different characteristics and functions of cobots in real industrial environments. Throughout the class, teachers are offered the opportunity to network with, share and receive feedback from other educators.

Teacher certification

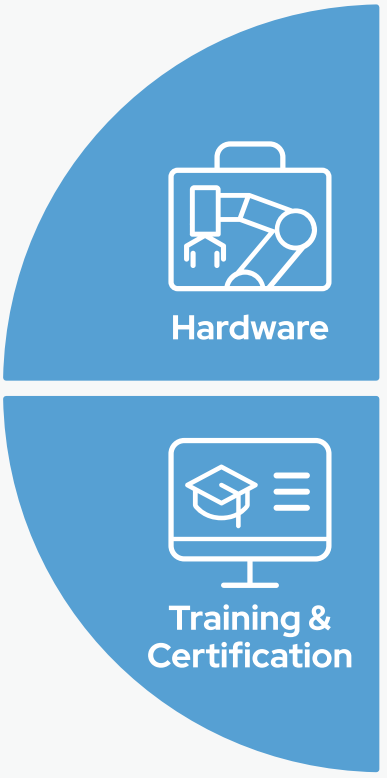
Upon completion of the Teacher Training Course, educators will receive an industry recognized UR Academy Certificate which:

- Recognizes the instructor as a UR certified educator
- Provides access the LMS & all content
- Enables the UR Curriculum to be taught to their students
- Enables teachers to issue UR certifications to their students who successfully complete the UR curriculum and testing

Your student's certification

The certification earned by students demonstrates to potential employers that a student has an industry recognized level of competency in the specialty of robotics. The following learning outcomes are tested:

- Mount the robot into the workspace or product line
- Build and optimize programs for several typical applications such as pick & place, palletizing, polishing or dispensing
- Connect and handle peripheral equipment, such as sensors, grippers or conveyor belts
- Use online tools to help with application programming
- Understand and can apply robot safety



A flexible program for a broad range of education needs

The UR Education Program is designed to satisfy a broad range of education needs - from secondary education to advanced research.

Technical Education

Prepare students for careers in robotics & automation:

- Modular plug and play solution
- Access to industry leading robotics curriculum
- Intuitive LMS to deliver courses and track student progress
- Teacher training & certification
- Student earned certification

Workforce Development

Re-skill the existing workforce with industry leading solutions:

- Scalable, flexible solutions to mirror industry needs
- Application specific solutions
- Online tools and resources
- Learn to manage the robot safely
- Student earned certification

University Education & Research

Flexible solutions for higher education and advanced research:

- Open-source platform ideal for application development
- URCap plug-in for customized software functionality
- UR+ ecosystem of accessories and software
- Online tools and support resources

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Software
LMS &
Curriculum
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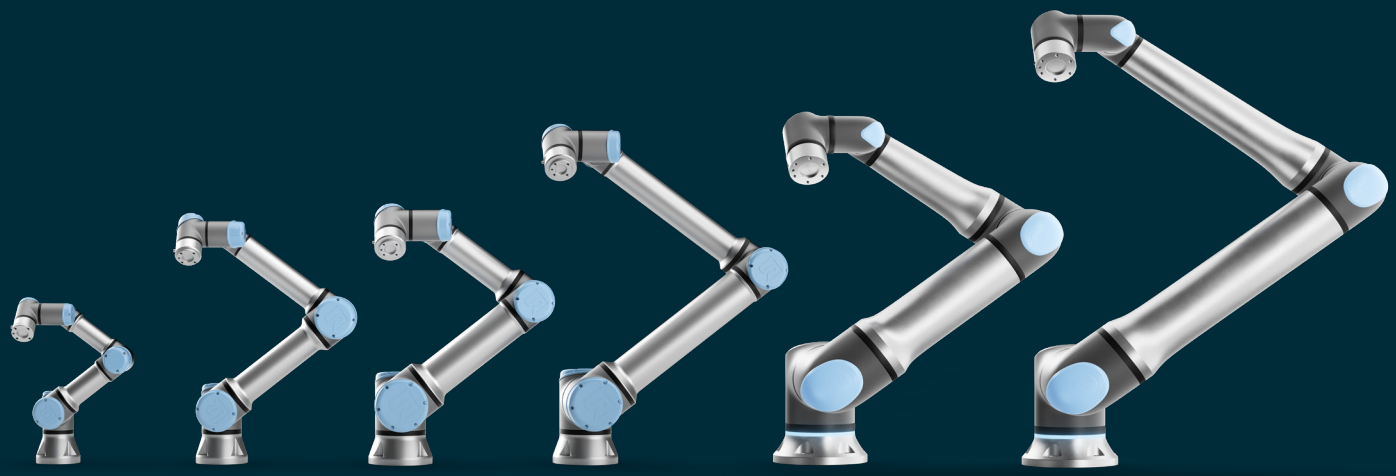
Let's empower the next generation of robotics innovators by putting leading technology into their hands.



UR3e UR5e UR16e UR10e UR30 UR20

"Robotics education is an essential skillset for the next generation of engineers, technicians, and operators. I think that exposure to robotics for my students is going to have a massive long-term impact."

Adam Paisie
Robotics & Automation Instructor, Delaware, USA

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