NI Academic Products

ni.com/academic

NATIONAL INSTRUMENTS

It All Starts With Academic

From space exploration to making clean water more globally accessible, the most impressive scientific achievements are also the kind that inspire students to pursue math and science as a career. But once the imagination of a future engineer has been capture, we need to keep them interested.

As more educators recognize the benefits of an integrated hardware/software teaching solution and hands-on learning to engage students, I'm excited by our potential to change engineering education for the better.

The key is realizing that theory alone doesn't excite a student's sense of wonder—it's the promise of putting theory to work through the use of real world tools to "do engineering." With this approach, not only do we prepare current students for meaningful careers, we attract new students to a profession that so critically needs them.

Educators must focus on adopting relevant tools and incorporating practical, real world lessons into the classroom and laboratory. Industry must develop scalable tools, show students how to leverage their creativity through the use of these tools, and make them widely available and affordable. This mutual effort is critical to ensuring student engagement.

It all starts with academic, and here at National Instruments, we're committed to working hand-in-hand with educators to prepare the students of today to solve the grand challenges of tomorrow.

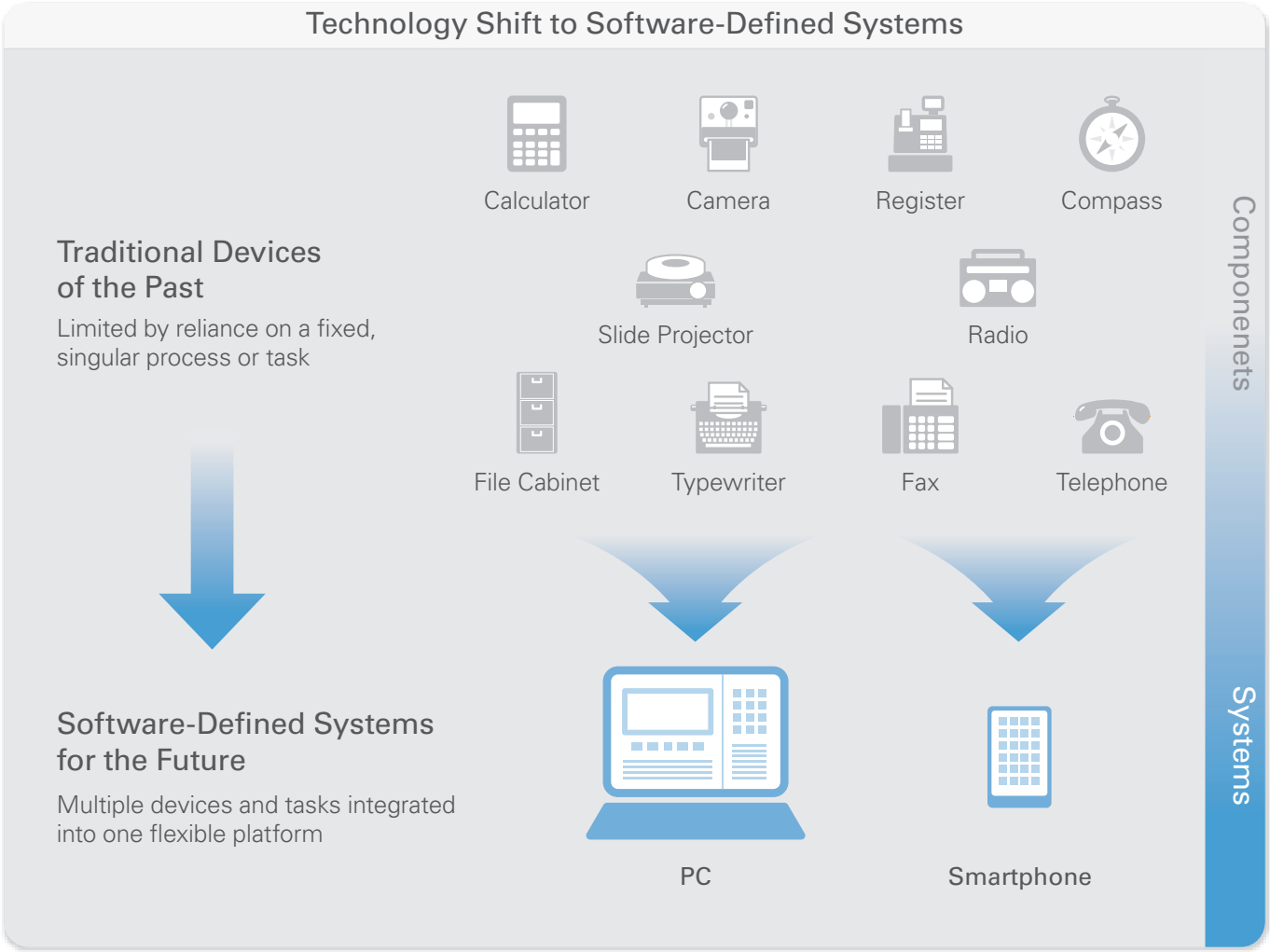
Dr. James Truchard
Founder and CEO
National Instruments

Preparing The Next Generation of Innovators

The first telephones converted human speech into electrical impulses using purely analog methods— no buttons, no encoding, and the sole purpose of connecting one user to another. The smartphones of today? Try tens of millions of transistors, powered by software, and capable of countless functions. Such is the power of progress, and such is the influence of Moore's Law, which shows us that speed is doubled and cost is halved as technology advances.

As electronic hardware and computer software become ubiquitous in modern day systems, the days of designing a single component or focusing on an isolated problem are over. Engineers can now leverage rapid technological growth through integration, while students are expected to understand how single components function in a larger system.

To bring industry-standard technology to the engineers of tomorrow, NI pairs theory with hands-on learning to deliver real-world experiences that prepare students to "do engineering." By integrating intuitive software and adaptable hardware to abstract complexity, students can then design and test systems faster. Whether students graduate with a degree in mechanical, biomedical, or electrical engineering, it's certain they'll be system designers. And with an array of best-in-class industry and educational hardware and graphical software, National Instruments is the company that provides the tools for the future of system design.



NI LabVIEW

Ultimate System Design Software—NI LabVIEW system design software provides engineers and scientists with the tools needed to create and deploy measurement and control systems. As the heart of the NI education platform, LabVIEW integrates all of the tools that the next generation of engineers and scientists need to build a wide range of applications in dramatically less time. It is the premier development environment for problem solving, accelerated productivity, and continual innovation. For more information, visit **ni.com/labview**.

Instant Compilation

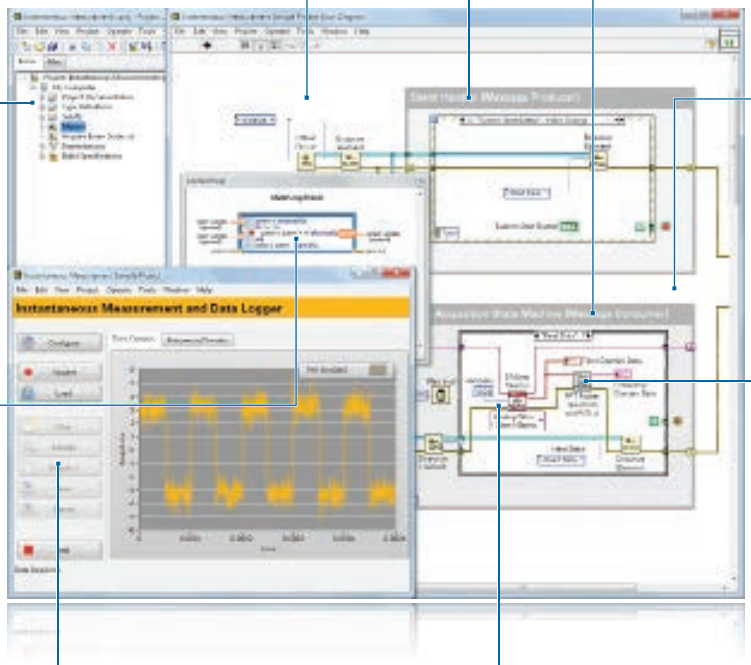
Focus on results while LabVIEW continually checks syntax during edit time

Inherent Parallelism

Scale performance with automatic multithreading

Deployment Targets

Deploy LabVIEW to thousands of targets such as PCs, real-time controllers and FPGAs



Block Diagram

Customize system behavior with graphical programming

Models of Computation

Combine and reuse your .m files, C code, HDL, control and simulation models, and more within LabVIEW

Signal Processing and Analysis

Save time with hundreds of built-in function libraries

Front Panel

Quickly create professional user interfaces to showcase your results

Seamless Hardware Integration

Bring real-world signals into LabVIEW from any device

Integrates directly with:

NI ELVIS | NI myDAQ | NI myRIO | NI CompactDAQ | NI CompactRIO | NI USRP | NI PXI | Third-party

Courseware available at **ni.com/courseware**

Relevant courses: Intro | Circuits | Power Electronics | Measurements | Controls | Embedded | RF/ Communications

NI Multisim

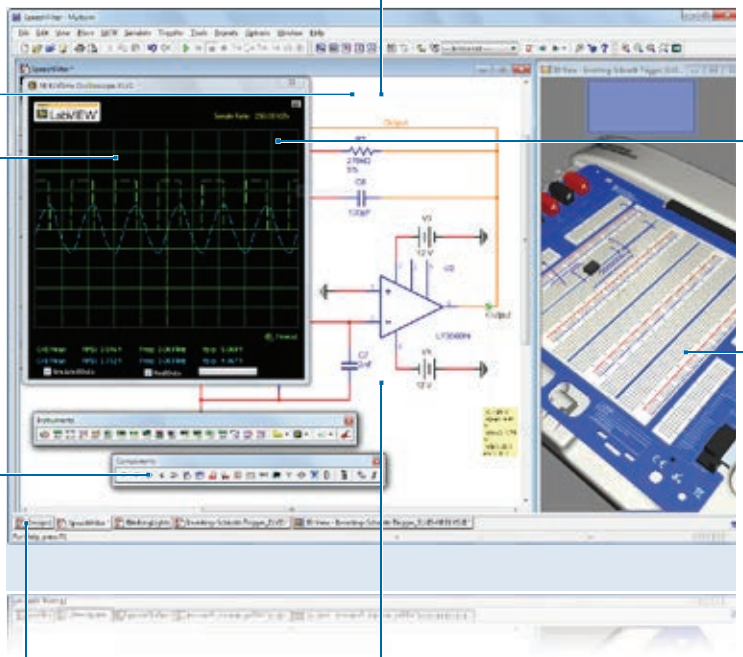
Ultimate Circuits Teaching Environment—NI Multisim is a comprehensive environment for teaching theory and concepts in analog, digital, and power circuits courses. It is the cornerstone of the NI circuits teaching solution and reinforces fundamentals of electronics while preparing students for the laboratory. The pedagogical features of NI Multisim are built into an intuitive interface powered by industry-standard SPICE simulation. For more information, visit **ni.com/multisim**.

Intuitive Analog and Digital Circuits Environment

Easy-to-learn features for mixed-mode and SPICE simulation to teach and analyze circuits in multiple courses

Pedagogical Features

Teach with interactive interfaces and rated devices



Measurement Integration

Compare acquired data from NI ELVIS and myDAQ with simulation results

Laboratory Transition

Learn how to connect devices and wires on the 3D NI ELVIS breadboard

24 Powerful Instruments

Visualize and investigate circuit behavior

Final Project Export

Full Ultiboard integration helps students design projects for NI myDAQ, NI myRIO and NI CompactRIO

Industry-Standard Devices

Library containing SPICE models from leading semiconductor manufacturers

Integrates directly with:

NI ELVIS

NI myDAQ

Design for:

NI myRIO

NI CompactDAQ

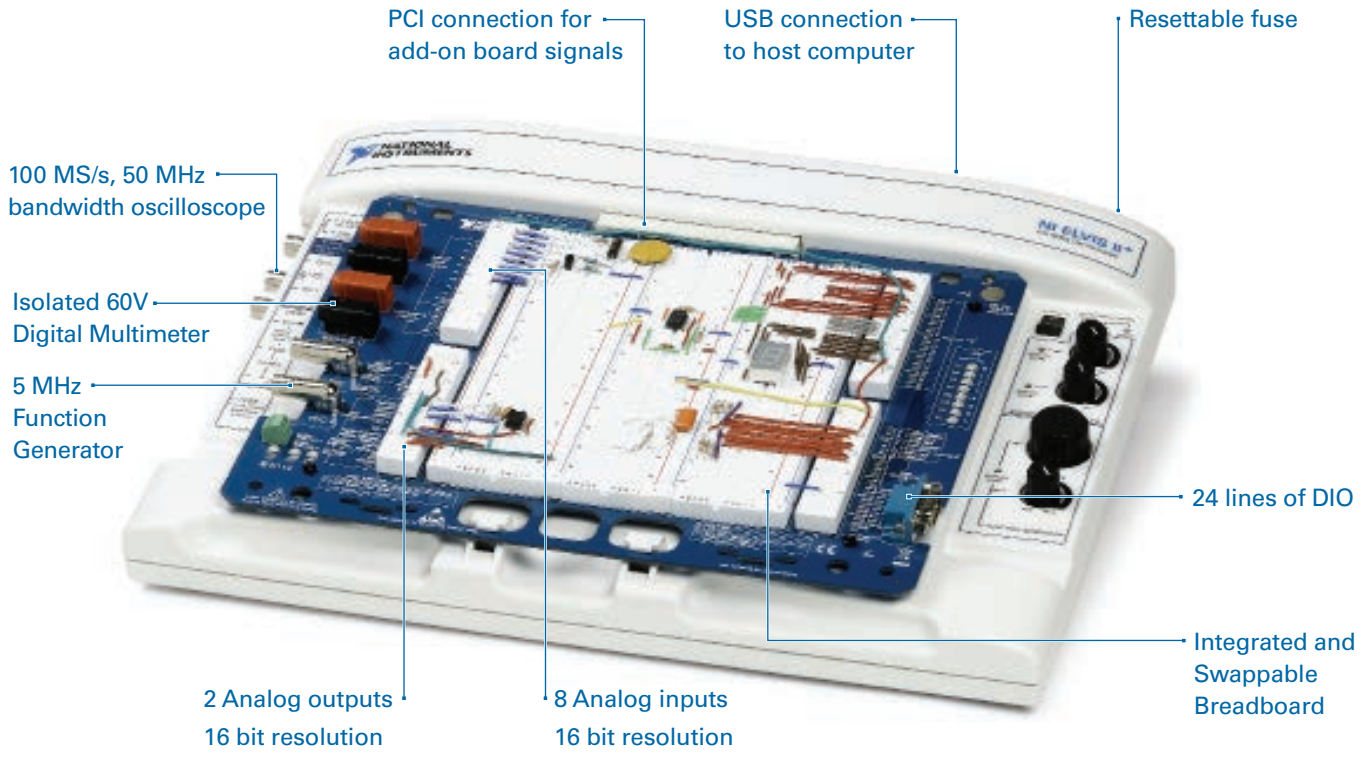
NI Single Board RIO

Courseware available at **ni.com/courseware/circuits**

Relevant courses: Intro Circuits Power Electronics Measurements Controls Embedded RF/ Communications

NI ELVIS

Modular, Engineering Education Lab Platform—Designed specifically for education, NI ELVIS has the flexibility to engage students in comprehensive experiments with twelve common lab instruments (including an oscilloscope, function generator, multimeter and bode analyzer) in a single device. The integrated breadboard lets students easily take circuit measurements, while an ecosystem of application-based add-on boards extend use throughout engineering curriculum. For more information, visit **ni.com/ni-elvis**.



Features

- Save space with 12 common lab instruments integrated into one device
- Expand functionality into course specific applications with ecosystem of add-on boards
- Prepare students with industry-standard NI DAQ technology
- Utilizes a ruggedized case and multiple safety features

Sotware

NI LabVIEW

NI Multisim

NI LabWindows™/CVI

NI LabVIEW MathScript RT Module

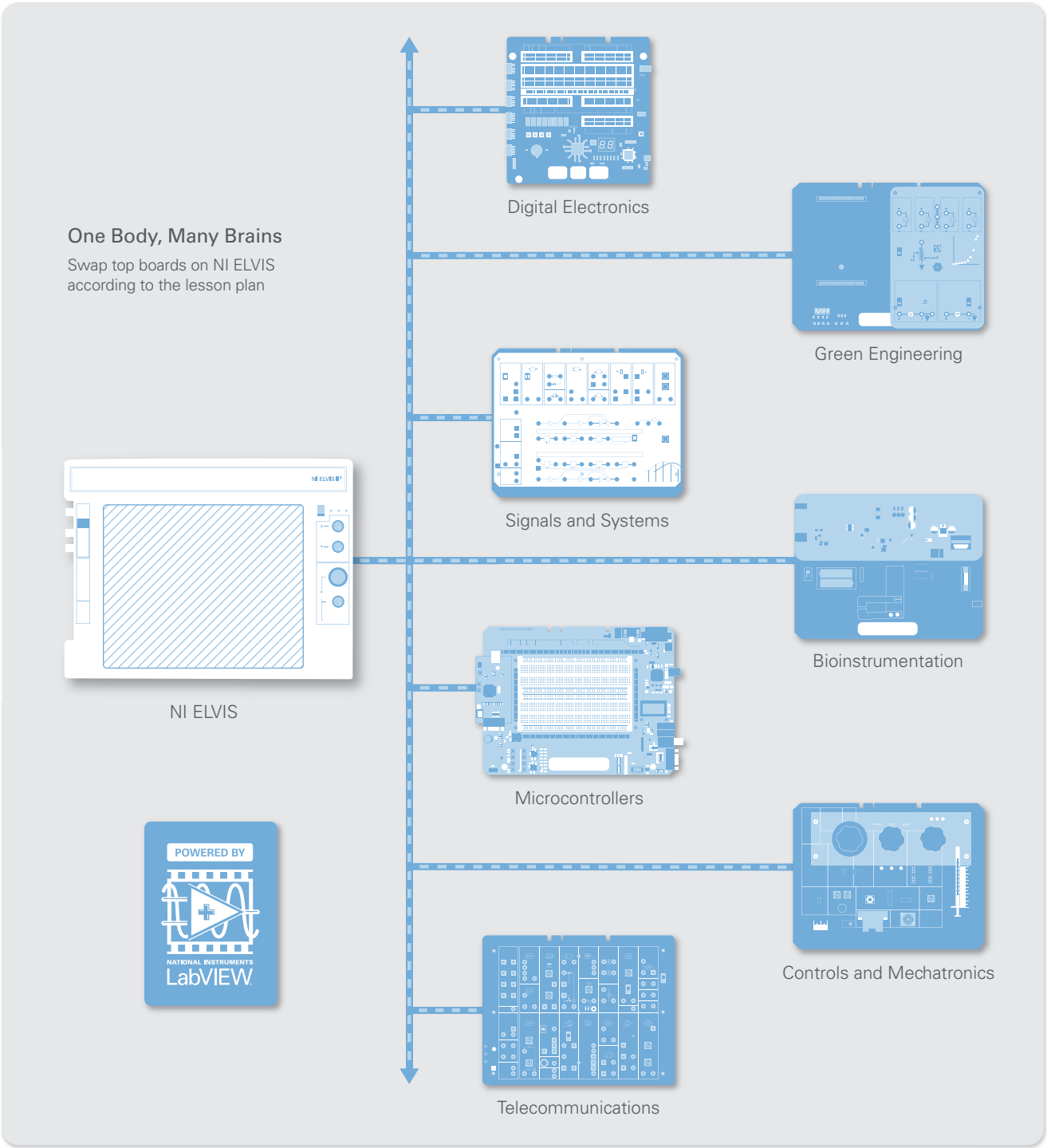
Also compatible with C/C++, .NET

Courseware available at **ni.com/ni-elvis/courseware**

Relevant courses: Intro Circuits Power Electronics Measurements Controls Embedded RF/ Communications

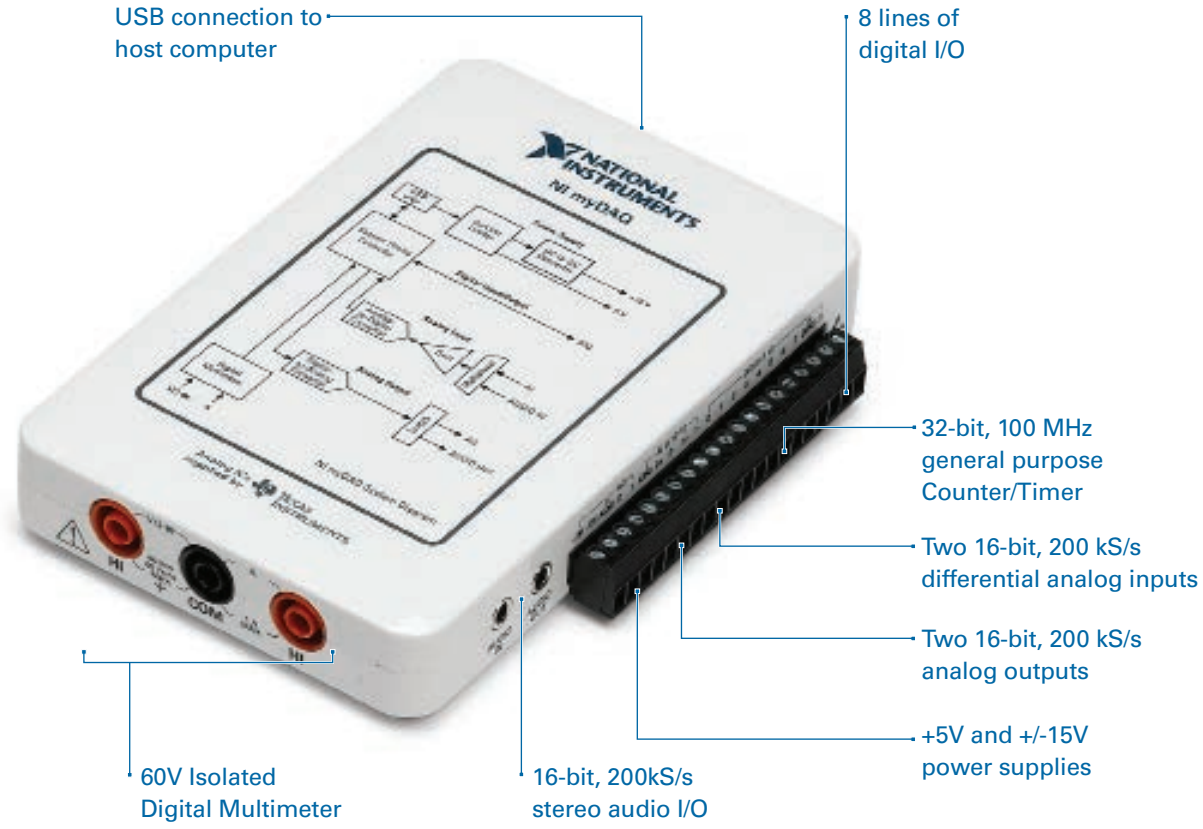
Teaching Ecosystem

Interchangeable add-on boards and curriculum for every application area—Educators can extend the NI ELVIS platform to teach concepts such as controls, telecommmunications, fiber optics, embedded design, bioinstrumentation, digital electronics, FPGAs, and more. Add-on boards from partners such as Digilent, Emona and Quanser come complete with complementary courseware. See the add-on board ecosystem at **ni.com/ni-elvis/applications**.



NI myDAQ

Portable Measurement and Instrumentation—Designed to expose students to a hands-on learning and project development experience anywhere at anytime, the compact and portable NI myDAQ integrates eight common lab instruments into one rugged device. With access to their own measurement instrument, students gain insight into how textbook theory is applied to real-world settings without having to be in the laboratory. For more information, visit **ni.com/mydaq**.



Features

- Eight common lab instruments in one device
- Ecosystem of plug-in NI miniSystems boards available
- Industry-standard NI DAQ technology framework
- Continuous and finite sampling modes available
- Ruggedized case and safety features for student use

Sotware

NI LabVIEW

NI Multisim

NI LabWindows/CVI

NI LabVIEW MathScript RT Module

Also compatible with C/C++, .NET

Courseware available at **ni.com/courseware/measurements**

Relevant courses:	Intro	Circuits	Power Electronics	Measurements	Controls	Embedded	RF/ Communications

NI myRIO

Portable, Embedded Student Design—Leveraging industry standard RIO technology from National Instruments, NI myRIO places the power of real-time performance and customizable I/O in the hands of students. Students have the ability to program the device to the pin but are also given the option to begin programming at a higher level to build familiarity with this integrated hardware and software tool. NI myRIO revolutionizes the way students complete design projects and helps students to do real engineering in one semester. For more information, visit **ni.com/myrio**.

Features

- Fully programmable FPGA through LabVIEW FPGA Module
- ARM Cortex-A9 processor
- Comprehensive ecosystem of sensors and actuators
- Real-time processor and FPGA via USB to deploy code
- Minutes to first measurement with NI myRIO Getting Started Wizard

Sotware

NI LabVIEW

NI LabVIEW Real-Time Module

NI LabVIEW FPGA Module

NI LabVIEW MathScript RT Module

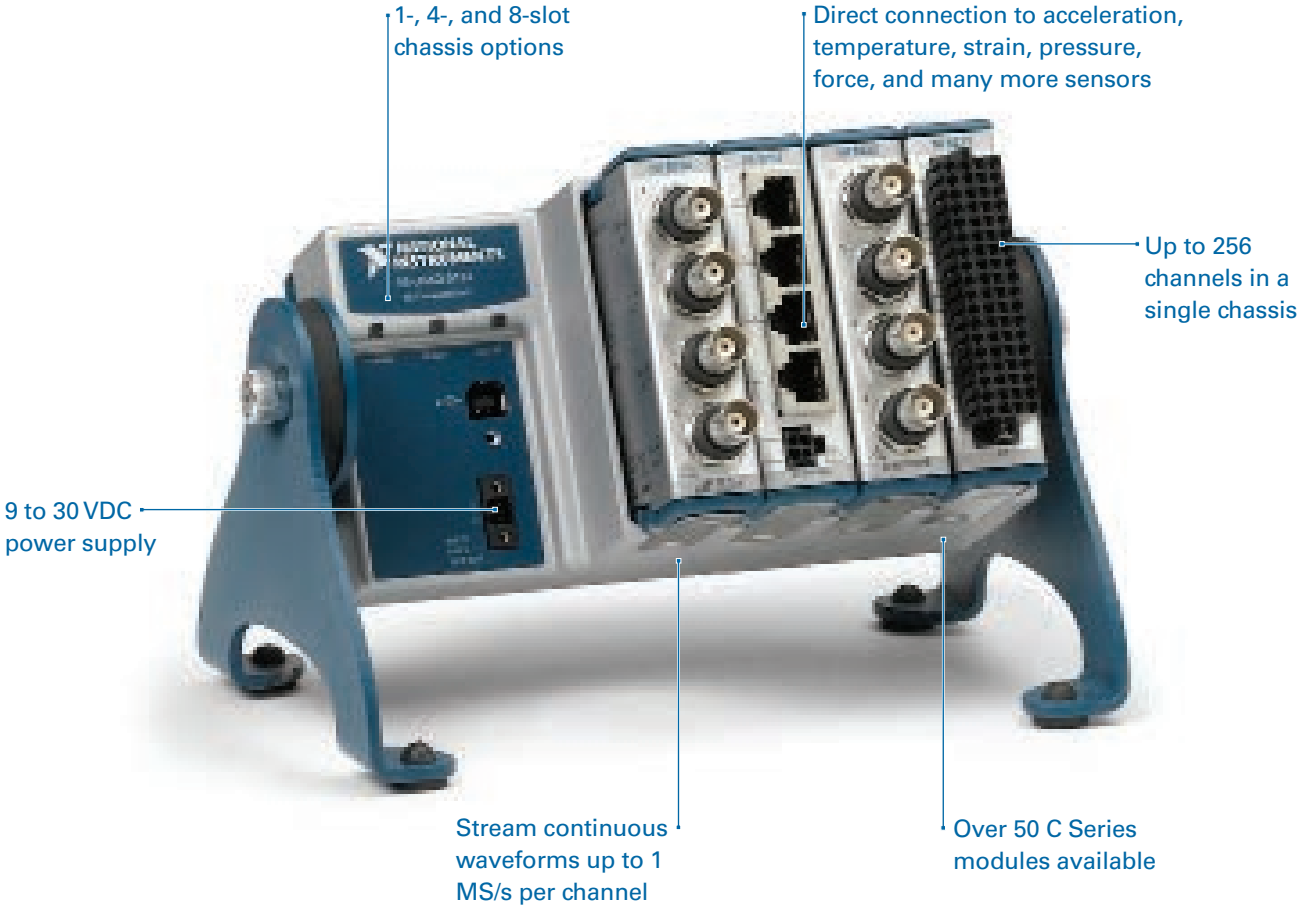
Also compatible with C/C++

Courseware available at **ni.com/courseware/controls**

Relevant courses: Intro Circuits Power Electronics Measurements Controls Embedded RF/ Communications

NI CompactDAQ

Modular, Sensor-Ready Data Acquisition—NI CompactDAQ is an industry-standard, modular data acquisition platform that can be used in benchtop and laboratory settings or mounted directly to test setups. The ecosystem of I/O modules provide the signal conditioning required to directly connect sensors while the integration with LabVIEW enables customers to acquire, analyze, display, and log data in minutes. For more information, visit **ni.com/cdaq**.



Features

- Quickly integrate into existing lab setups with ready-to-run examples for sensor data acquisition and logging for LabVIEW and text-based languages
- Acquire from multiple sensors and control multiple actuators simultaneously with NI-STC3 timing technology
- Log data in any setting with available desktop mounting stand or mount directly to test apparatus

Sotware

NI LabVIEW

NI LabWindows/CVI

NI LabVIEW MathScript RT Module

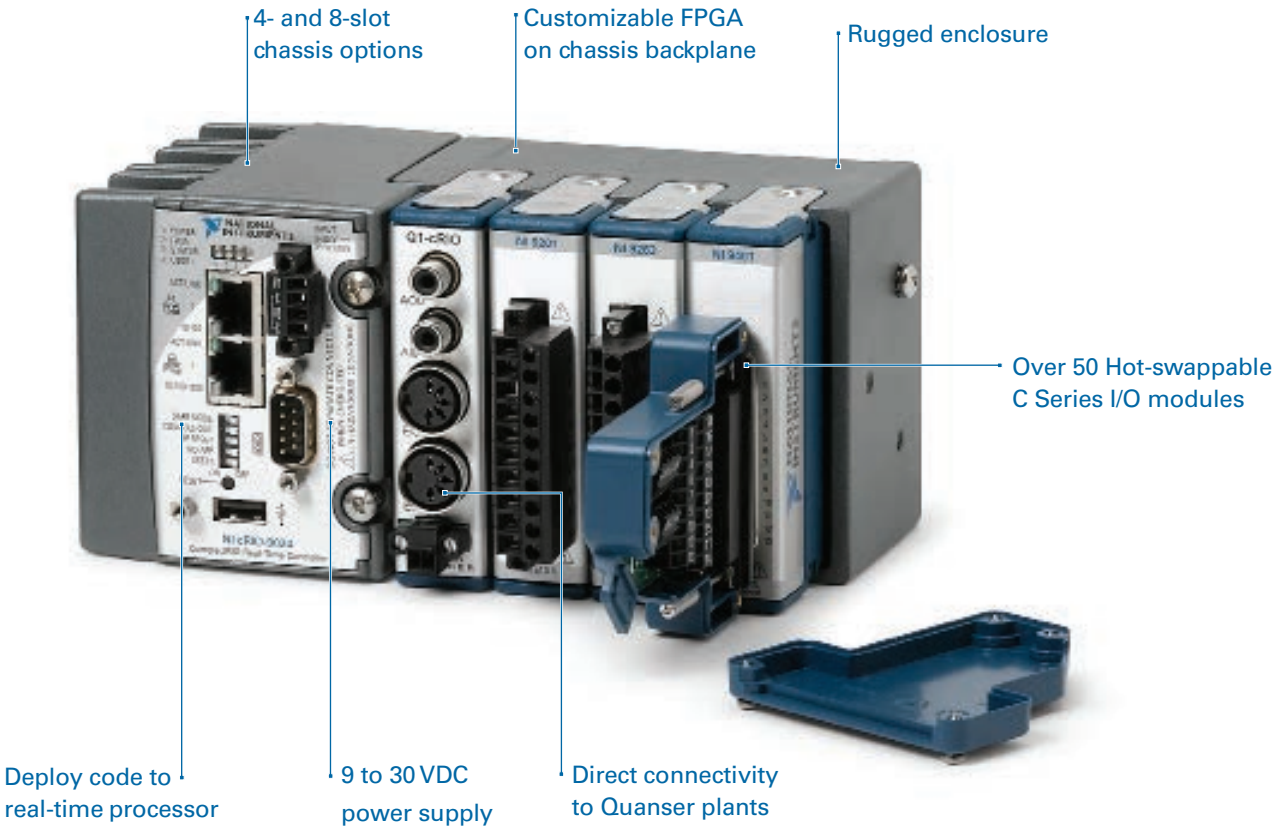
Also compatible with C/C++, .NET

Courseware available at **ni.com/courseware/measurements**

Relevant courses:	Intro	Circuits	Power Electronics	Measurements	Controls	Embedded	RF/ Communications

NI CompactRIO

Rugged, Reconfigurable Control and Monitoring—With an FPGA-based backplane and a real-time controller, NI CompactRIO is an industry-standard platform that delivers deterministic execution of control algorithms. NI CompactRIO can be expanded by incorporating various modules including the Quanser Q1-cRIO module that provides direct connectivity to Quanser plants, which are widely used for controls and mechatronics teaching. For more information, visit **ni.com/crio**.



Features

- Achieve deterministic loop rates up to 40 MHz for control and data logging applications
- Expand functionality in controls, Mechatronics, and robotics applications with reconfigurable deployment options
- Optimize your control algorithms with FPGA parallel processing capabilities

Sotware

NI LabVIEW

NI LabVIEW MathScript RT Module

NI LabVIEW Control Design and Simulation Module

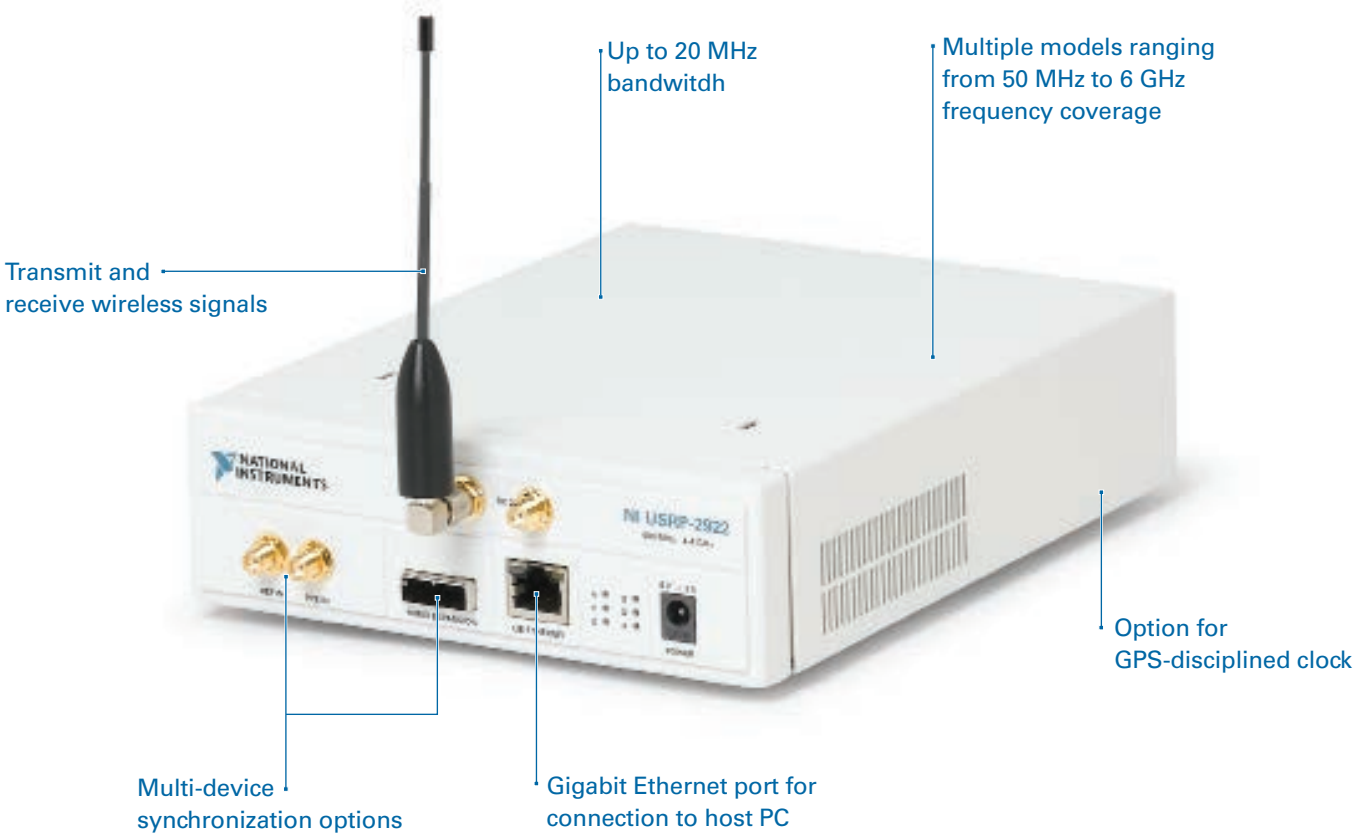
NI LabVIEW FPGA Module

Courseware available at **ni.com/courseware/measurements**

Relevant courses: Intro Circuits Power Electronics Measurements Controls Embedded RF/ Communications

NI USRP

Software Defined Radio Platform—The LabVIEW design environment with NI USRP hardware and available courseware provides students hands-on experiences in wireless and digital communications. Cover introductory teaching to advanced research topics utilizing graphical system design and integrate your .m script algorithms to design a complete wireless communications system. For more information, visit **ni.com/usrp**.



Features

- Complete, ready-to-use teaching solution with available, lab-ready courseware for wireless communications
- Affordable and easy-to-use platform for hands-on learning with real-world wireless signals
- Scalable, from teaching fundamentals to cutting-edge research applications

Sotware

NI LabVIEW

NI LabVIEW MathScript RT Module

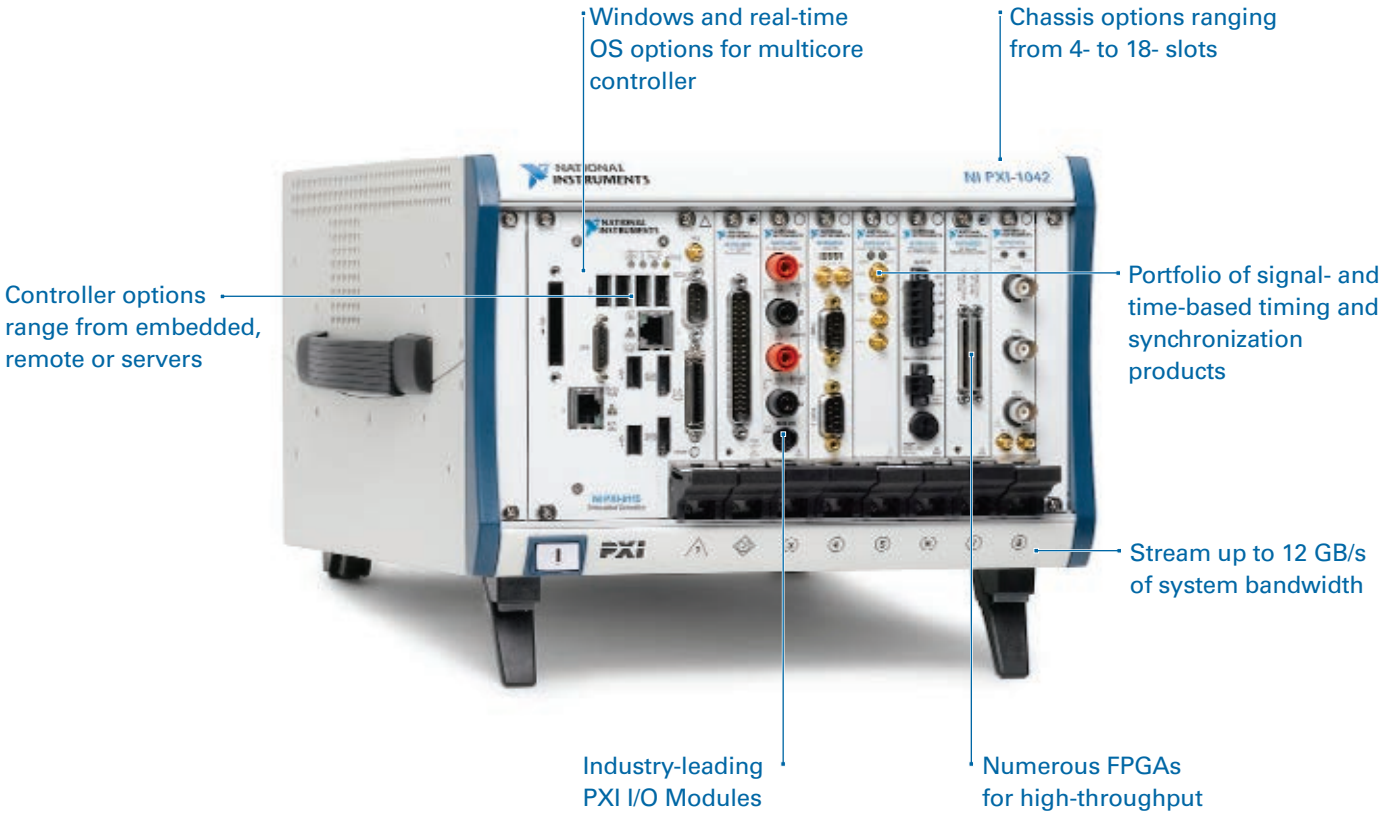
NI LabVIEW Modulation Toolkit

Courseware available at **ni.com/courseware/measurements**

Relevant courses: Intro Circuits Power Electronics Measurements Controls Embedded RF/ Communications

NI PXI

PC-Based Platform for Test, Measurement, and Control—PXI is the industry-leading modular instrumentation platform used to build compact, high-performance automated test systems. The measurement hardware is housed in an industrial chassis and has a host computer either embedded in the chassis or connected to a PC through a cabled interface. Benefits specific to PXI include increased channel count, portability, and integrated timing and synchronization. For more information, visit **ni.com/pxi**.



Features

- More than 600 NI PXI products ranging from DC to 26.5 GHz, such as digital multimeter, RF, multifunction DAQ, and switches.
- Take advantage of the latest technologies for teaching and research such as multicore processing and FPGAs
- Combine up to 17 instruments in a single chassis to save lab space
- Utilize a tightly integrated hardware and software platform

Sotware

NI LabVIEW

NI LabWindows/CVI

NI LabVIEW MathScript RT Module

Many application specific NI Software Modules

Relevant courses: Intro Circuits Power Electronics Measurements Controls Embedded RF/ Communications

The NI Academic Program

8,000+
classrooms using NI tools for hands-on learning

200+
LabVIEW Academies in more than 29 countries

100+
textbooks integrate NI tools in more than 23 languages

35,000+
companies using NI tools to solve grand challenges

240,000+
students use NI tools each year in *FIRST*® and WRO robotics competitions

125+
NI and third-party hardware and software ecosystem elements

Features

LabVIEW Academy

The LabVIEW Academy program provides teaching materials and certifies academic institutions to teach LabVIEW for credit and non-credit courses. **ni.com/academy**

Case Studies

See how academic institutions are harnessing the power of graphical system design to innovate across a variety of application areas. **ni.com/academic/case-studies**

K12 Lab

Find resources and lesson plans for science and engineering outreach, as well as engaging introductory activities designed for primary and secondary students. **k12lab.com**

Teaching Materials

Browse hundreds of lab exercises, example programs, tutorials, and projects to help inspire your classroom and laboratory. **ni.com/courseware**

Textbooks

Choose from multiple textbooks, lab manuals, and problem sets developed by leading professors that integrate NI tools for hands-on learning for your classroom or lab. **ntspress.com**

Recommended Solutions

Application	Portable	Teaching Lab	Industry/Research	Software
Intro to Engineering	 myDAQ	 NI ELVIS	N/A	NI LabVIEW NI LabVIEW MathScript RT Module
Analog and Digital Circuits	 myDAQ	 NI ELVIS	 PXI	NI Multisim NI LabVIEW
Power Electronics	 myRIO	 NI ELVIS + add-on board	 CompactRIO	NI LabVIEW NI LabVIEW FPGA Module NI LabVIEW Real-Time Module NI Multisim
Measurement and Instrumentation	 myDAQ	 NI ELVIS	 CompactDAQ	NI LabVIEW NI LabVIEW MathScript RT Module
Controls and Mechatronics	 myRIO	 NI ELVIS + add-on board	 CompactRIO	NI LabVIEW NI LabVIEW Control Design and Simulation Toolkit
Embedded Systems	 myRIO	 NI ELVIS + add-on board	 CompactRIO	NI LabVIEW NI LabVIEW FPGA Module NI LabVIEW Real-Time Module
RF and Communications	N/A	 USRP	 PXI	NI LabVIEW NI LabVIEW Modulation Toolkit NI LabVIEW MathScript RT Module

Do Engineering

National Instruments gives educators the tools to make it possible for students to go beyond theory and simulation and do engineering every step of the way.

Support from Local NI Field Engineers

NI has local offices in over 50 countries and a dedicated team of NI engineers to help you find the right solution for your teaching and research applications. **ni.com/global**

Academic Discounts

Degree-granting institutions with the primary function of educating students are eligible for discounted pricing on hardware and software. **ni.com/academic/discounts**

Student Design Competition

Share how your students are incorporating LabVIEW into design projects for a chance to win cash prizes and be recognized at NIWeek. **ni.com/studentdesign**

NIWeek Academic Forum

The NIWeek Academic Forum unites educators, researchers, and students from around the world every August. **ni.com/niweek/academic-forum**

Training

NI offers various forms of training to help you get up and running faster. Ask your local NI office about special training prices for Academics. **ni.com/training**

Software Licensing

NI Academic Site License includes the most popular NI software packages for academic institutions at a fraction of the industry price. **ni.com/asl**

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