



NI is now part of Emerson.



**EMERSON**<sup>™</sup>

# Training and Certification Catalog

2024 Edition





# Learn Faster. Validate Skills. Engineer Possibilities.

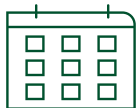
With a wide variety of learning resources delivered by technical experts, NI is committed to ensuring your success with our products and services, no matter the industry or application area. Start your learning journey today by exploring NI's training and certification offerings.

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Whether you are new to NI products or have been using them for years, access to the right learning resources when you need them is critical to your success. NI provides a comprehensive education service to advance your current application and support you at every stage of your career.

This program is the most effective way to increase productivity, reduce development time, and improve your ability to engineer robust, maintainable applications with NI products. It's also individually tailored to fit your schedule, work on your terms, and deliver core competency for beginners and experts alike.



More than 40 years providing education services



90% customer satisfaction



92% of our customers recommend our courses

SOURCE: GLOBAL COURSE SURVEY, FROM JANUARY TO SEPTEMBER 2021.



# Follow your path. Find your success.

Increased productivity with NI tools starts with a clearly defined plan outlining your goals and application areas. You can then work with NI to identify the best strategies for acquiring and validating skills to take your productivity to the next level.

Learning paths are designed to help you navigate the learning resources available in your application area. Throughout each learning path, you can leverage assessments to identify the learning content you need to successfully develop applications.

Customize a learning path to your needs by choosing optional courses and topics, preferred learning format, and frequency of engagement with the materials.

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## DEVELOP LABVIEW APPLICATIONS

Go from developing basic applications in the LabVIEW graphical programming environment to architecting large applications in single- or multideveloper settings.

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## EMBEDDED MEASUREMENT, CONTROL, AND MONITORING

Learn how to rapidly design, prototype, and deploy embedded control and monitoring systems using LabVIEW Real-Time, LabVIEW FPGA, and NI customizable off-the-shelf hardware.

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## DEVELOP AUTOMATED PRODUCTION TEST SYSTEMS

Learn how to develop and manage test applications in the TestStand environment, distribute them to test stations, build test code for your hardware and devices under test, and log test results to a database.

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## DEVELOP HARDWARE-IN-THE-LOOP TEST SYSTEMS

Develop a real-time test system and create a run-time editable user interface with VeriStand or the HIL and Real-Time Test Software Suite.

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## PC-BASED DATA ACQUISITION AND DATA LOGGING

Acquire the skills to configure your DAQ hardware, perform accurate single-point and continuous measurements, and synchronize your data acquisition.

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## INSTALL, SET UP, AND CONTROL NI MODULAR INSTRUMENTS

Learn the complete test workflow for your instrument, from configuration and cabling to control, calibration, debugging, and optimizing for speed and precision.

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## MANAGE DATA WITH DIADEM

Learn how to view and graphically investigate data, automate report generation, and extend the capabilities of DIAdem.

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## SEMICONDUCTOR TEST SYSTEM CURRICULUM

Learn how to develop and debug configuration-based test programs, create custom measurements, and optimize advanced test programs for mixed-signal and RF devices using the NI Semiconductor Test System (STS).

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## USING SYSTEMLINK™ SERVER TO MANAGE SYSTEMS AND DATA

Use SystemLink™ Server to manage test systems, deploy software, manage hardware assets, and collect and analyze test results.



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**INSTALLING, MONITORING, AND  
UPGRADING SYSTEMLINK ENTERPRISE**

Discover the technology, capabilities, and tools to install and manage SystemLink Enterprise deployments.

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**OPTIMALPLUS FUNDAMENTALS  
(FOR SEMICONDUCTOR)**

Explore the NI OptimalPlus solution and get a basic review of Portal+, Rules+, and Control Room+ applications. Learn how to create your own Portal+ data source and how third-party systems can extract data from the OptimalPlus database.

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**OPTIMALPLUS SEMICONDUCTOR  
GLOBAL OPERATIONS**

Explore the power of big data analytics to improve yield and productivity utilizing OptimalPlus Global Operations solutions.

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**OPTIMALPLUS SEMICONDUCTOR  
GLOBAL OPERATIONS+**

Address process-related issues and increase quality and reliability utilizing Global Operations+ solutions.

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**OPTIMALPLUS SEMICONDUCTOR  
"TRAIN THE TRAINER" PROGRAM**

Become the subject matter expert and first point of contact for product analytics OptimalPlus tools queries within your organization.

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**OPTIMALPLUS SEMICONDUCTOR  
IT TIER 1 ONBOARDING**

Acquire the IT system admin skills to be the first point of contact for NI OptimalPlus semiconductor IT Tier 1 queries.

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**OPTIMALPLUS NON-SEMICONDUCTOR  
IT TIER 1 ONBOARDING**

Acquire the IT System Admin skills to be the first point of contact for NI OptimalPlus Non-Semiconductor IT Tier 1 queries.

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**OPTIMALPLUS FUNDAMENTALS  
(FOR NON-SEMICONDUCTOR)**

Explore the NI OptimalPlus non-semiconductor solution. Get a basic review of Portal+ and Rules+.

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**WHAT IS NEW IN SPECIFIC  
OPTIMALPLUS APPLICATIONS?**

Learn the latest OptimalPlus improvements and additions and stay up-to-date with the cutting-edge functionalities.



# Common Learning Paths

Find the training courses, certification exams, and proficiency events to meet your application needs using the following customized learning paths. These paths were developed around the recommended skill levels and additional areas of interest someone with this application might have.

Use the descriptions to the right of the learning path to help you determine how far along the path to progress. Keep in mind that many of our courses are available in both instructor-led and on-demand formats. For your consideration, optional courses, exams, events, and assessments have been included at the bottom of each path and can be used anytime to help you customize your learning to your needs.



# Develop LabVIEW Applications

Reduce development time and costs through faster learning and increased productivity with LabVIEW. This learning path is for engineers developing applications using LabVIEW. It presents the courses, exams, and events to help you go from developing basic applications in the LabVIEW graphical programming environment to architecting large applications in single- or multiple-developer settings. Discover recommended techniques to successfully develop applications that can scale as your projects evolve.

## GETTING STARTED

**01** LabVIEW Core 1  
+  
LabVIEW Core 2  
+  
CLAD Exam

Explore the LabVIEW environment, dataflow programming, and common LabVIEW development techniques in a hands-on format.

Design, implement, and distribute stand-alone applications using LabVIEW and apply single- and multiple-loop design patterns for application functionality.

Certified LabVIEW Associate Developers demonstrate a working knowledge of the LabVIEW environment, a basic understanding of coding and documentation best practices, and the ability to understand and interpret existing code.

Technician or basic developers using LabVIEW to develop, support, or troubleshoot a small-to-medium application can learn to apply basic design patterns and troubleshoot or debug LabVIEW code.

**02** LabVIEW Core 3  
+  
CLD Exam

Learn structured best practices to design, implement, document, and test LabVIEW applications.

The second LabVIEW certification exam validates the ability to design and develop functional programs while minimizing development time and ensuring maintainability through proper documentation and style.

Software engineers who need to design and develop a medium-to-large application with more than one process will learn to evaluate file formats, create executables, handle errors during execution, and design to user requirements.

**03** Software Engineering for Test Applications  
+  
CLA Exam<sup>1</sup>

Learn common practices for managing large team-oriented application development projects.

The third and highest level of LabVIEW certification demonstrates mastery in architecting and project-managing LabVIEW applications.

<sup>1</sup>CLA Exam requires a valid CLD to attempt.

Software architects designing the application architecture or acting as technical lead or project manager for a large application can learn to leverage the appropriate tools and techniques to manage development; design, develop, and document a clean API; and analyze the architecture of a LabVIEW application for improvement.

## ADDITIONAL OPTIONS

[LabVIEW Connectivity](#)

[Object-Oriented Design and Programming in LabVIEW](#)

[Actor-Oriented Design in LabVIEW](#)

## BADGE ASSESSMENTS

[LabVIEW Programming](#)

[LabVIEW Application Development](#)



# Embedded Measurement, Control, and Monitoring

This learning path is for users developing embedded control and monitoring systems. It presents courses, exams, and events that teach you how to design, prototype, and deploy reliable and deterministic embedded systems using LabVIEW. Consider this path if you are using the Embedded Control and Monitoring Software Suite, the LabVIEW Real-Time Module, or the LabVIEW FPGA module with CompactRIO, Single-Board RIO, PXI, or R Series multifunction reconfigurable I/O devices.

## GETTING STARTED

**01**

LabVIEW Core 1  
+  
LabVIEW Core 2  
+  
CLAD Exam

Explore the LabVIEW environment, dataflow programming, and common LabVIEW development techniques in a hands-on format.

Design, implement, and distribute stand-alone applications using LabVIEW and apply single- and multiple-loop design patterns for application functionality.

Certified LabVIEW Associate Developers demonstrate a working knowledge of the LabVIEW environment, a basic understanding of coding and documentation best practices, and the ability to understand and interpret existing code.

For those designing, prototyping, and deploying embedded control and monitoring applications, LabVIEW Core courses introduce the LabVIEW environment, communication mechanisms, and development techniques.



**02**

Developing Embedded Applications Using CompactRIO and LabVIEW Real-Time  
+  
Developing Embedded Applications Using CompactRIO and LabVIEW FPGA  
+  
CLEM Exam<sup>1</sup>

Learn how to efficiently design, prototype, and deploy a reliable embedded control and monitoring application.

Extend the functionality of your CompactRIO system by using LabVIEW FPGA.

Certified LabVIEW Embedded Systems Developer Certification demonstrates proficiency and expertise in analyzing requirements for and designing, developing, debugging, and deploying reliable mission-critical embedded control and monitoring applications.

Translate system requirements into a scalable software architecture, choose appropriate methods for interprocess and network-based communication, design for reliability, and efficiently deploy and replicate your embedded system.

<sup>1</sup>CLEM Exam requires a valid CLD or CLA certification to attempt.

## ADDITIONAL OPTIONS

LabVIEW Core3

CLD Exam

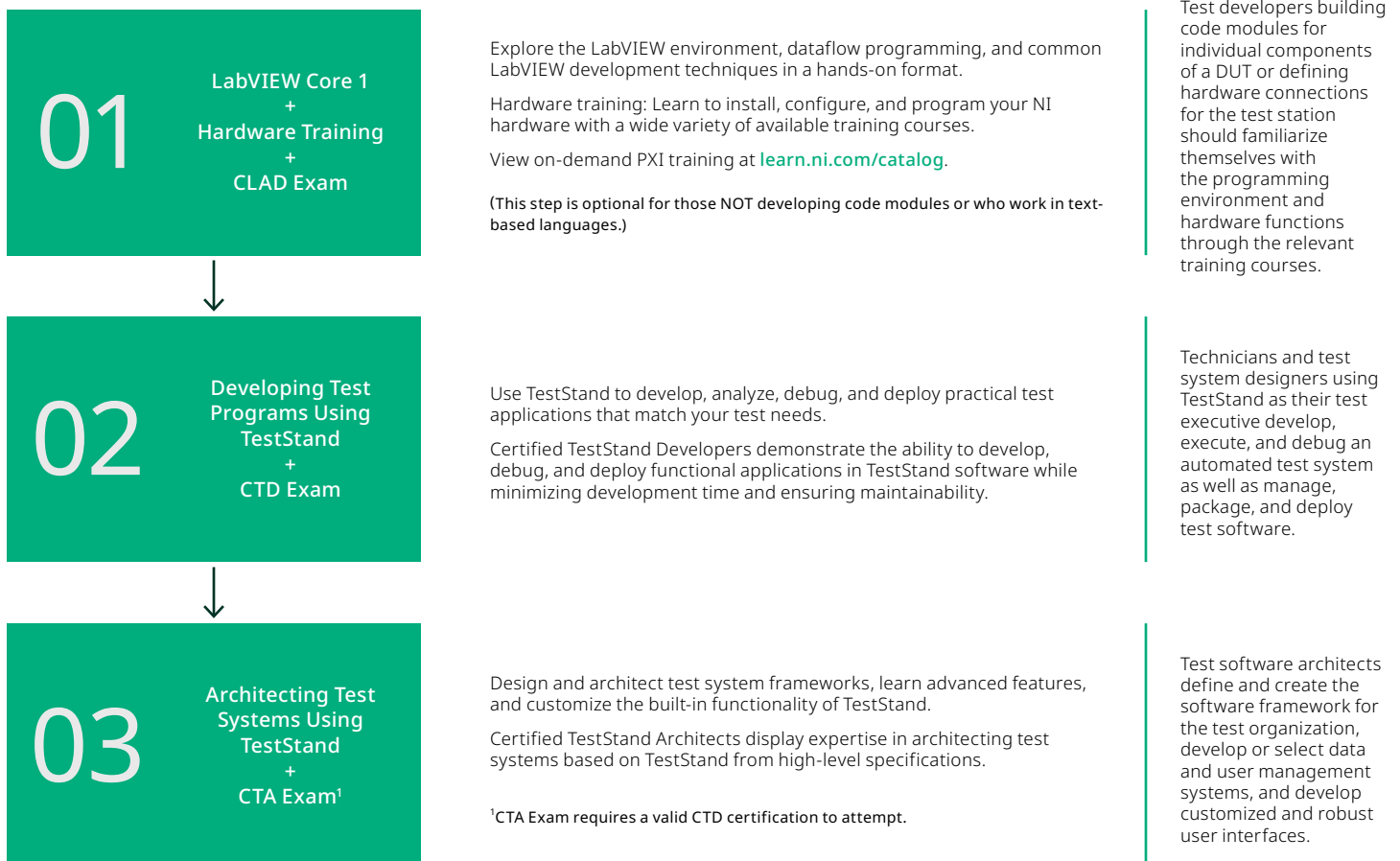




# Develop Automated Production Test Systems

This learning path is for engineers building manufacturing test or production test applications with LabVIEW + or TestStand. It presents the courses, exams, and events that teach you to develop practical test applications in the TestStand environment and distribute them to test stations, build test code for your hardware and devices under test, and log test results to a database.

## GETTING STARTED



## ADDITIONAL OPTIONS

LabVIEW Core 2  
Data Acquisition Using NI-DAQmx and LabVIEW  
Modular Instrument Courses

## BADGE ASSESSMENTS

TestStand Navigation and Diagnostics  
TestStand Sequence Development  
Test Principles  
Test Instrumentation



## Develop Hardware-in-the-Loop Test Systems

This learning path is for engineers developing real-time test and hardware-in-the-loop applications with VeriStand or the HIL and Real-Time Test Software Suite. It presents the courses, exams, and events that teach you how to develop a real-time test system and create a run-time editable user interface using VeriStand.

### GETTING STARTED

**01** HIL Fundamentals Using NI VeriStand

Use the out-of-the-box features of VeriStand to develop real-time test applications such as hardware-in-the-loop test systems.

Whether you are creating real-time test systems such as HIL simulators and dynamometers or are tasked with executing and modifying existing VeriStand test systems, you can learn the fundamentals for test development and operation.



**02** LabVIEW Core 1 + Developing Embedded Applications Using CompactRIO and LabVIEW Real-Time

Explore the LabVIEW environment, dataflow programming, and common LabVIEW development techniques in a hands-on format.

Learn how to efficiently design, prototype, and deploy a reliable embedded control and monitoring application.

Learn to add more functionality to VeriStand using the power of LabVIEW. Whether you need to create custom real-time logic, develop hardware algorithms on an FPGA, or redesign your user interface, LabVIEW training courses will provide you with useful skills to add functionality to your real-time test system.

### ADDITIONAL OPTIONS

LabVIEW Core 2

CLAD Exam

LabVIEW Core 3

CLD Exam

Data Acquisition Using NI-DAQmx and LabVIEW

Developing Embedded Applications Using CompactRIO and LabVIEW FPGA

Exploring Data Interactively Using DIAdem

### BADGE ASSESSMENTS

LabVIEW Programming

DIAdem Data Exploration



## PC-Based Data Acquisition and Data Logging

This learning path is for engineers using NI DAQ devices and LabVIEW to develop customized and automated measurements to meet application requirements. It presents the courses, exams, and events that teach you how to configure your hardware, perform accurate single-point and continuous measurements, and synchronize your data acquisition.

### GETTING STARTED

**01**

LabVIEW Core 1  
+  
Data Acquisition  
Using NI-DAQmx  
and LabVIEW  
+  
LabVIEW Core 2  
+  
CLAD Exam



**02**

LabVIEW Core 3  
+  
CLD Exam

Explore the LabVIEW environment, dataflow programming, and common LabVIEW development techniques in a hands-on format.

Explore the fundamentals of data acquisition using sensors, NI data acquisition hardware, and LabVIEW.

Design, implement, and distribute stand-alone applications using LabVIEW and apply single- and multi-loop design patterns for application functionality.

Certified LabVIEW Associate Developers demonstrate a working knowledge of the LabVIEW environment, a basic understanding of coding and documentation best practices, and the ability to understand and interpret existing code.

After an introduction to the LabVIEW environment, communication mechanisms, and development techniques, developers learn to connect signals; acquire, display, and log measurements; generate waveforms; and select resolution and sample rates.

Learn structured best practices to design, implement, document, and test LabVIEW applications.

The second certification exam validates the ability to design and develop functional programs while minimizing development time and ensuring maintainability through proper documentation and style.

For those who need to integrate data acquisition as a component in a large application or add advanced functionality such as synchronization or handling large quantities of data, advanced LabVIEW training is recommended.

### ADDITIONAL OPTIONS

[Datalogging with FlexLogger](#)

[Exploring Data Interactively Using DIAdem](#)

[LabWindows/CVI Core 1](#)

[LabWindows/CVI Core 2](#)

### RECOMMENDED OPTIONS

[PXI System Setup and Maintenance](#)

[PXI Timing and Synchronization](#)

[Setting Up, Acquiring Data, and Maintaining Your CompactDAQ System](#)

### BADGE ASSESSMENTS

[Taking Physical Measurements](#)

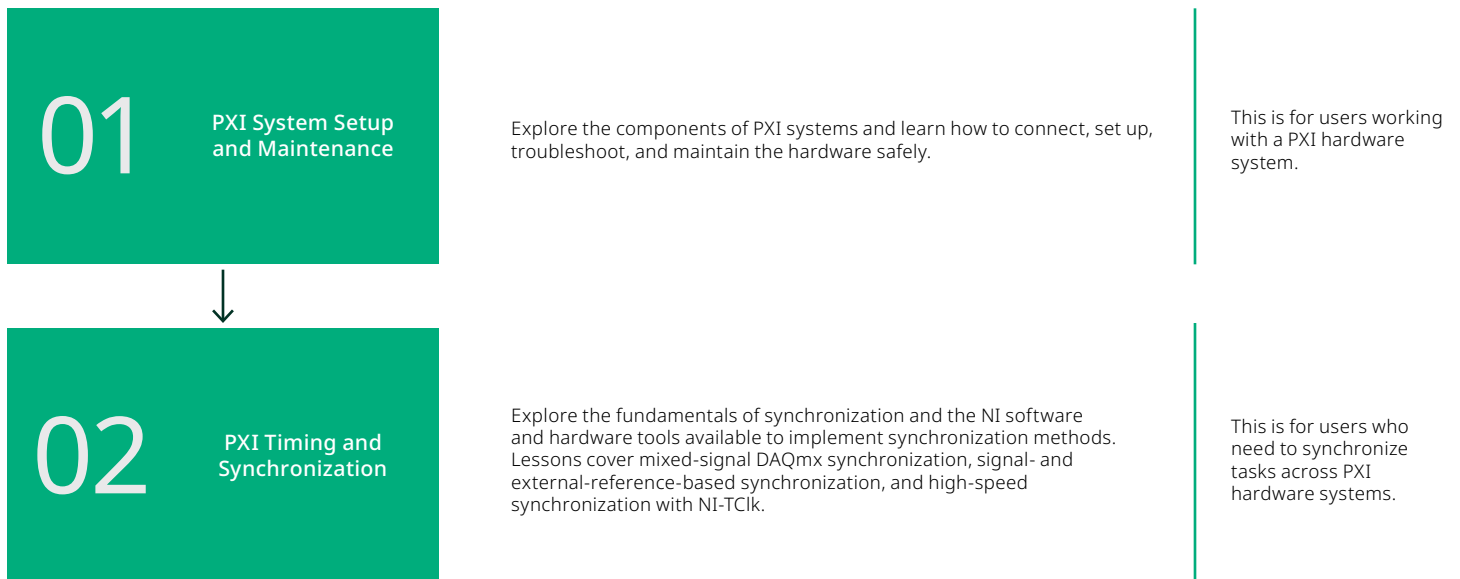
[LabVIEW Programming](#)



# Install, Set Up, and Control NI PXI Modular Instruments

These on-demand courses are for engineers using NI PXI modular instruments to create, generate, acquire, and analyze data and signals, both interactively in InstrumentStudio™ software and programmatically in LabVIEW. Learn the complete test workflow from configuration and cabling to control, calibration, debugging, and optimizing for speed and precision.

## GETTING STARTED



## MODULAR INSTRUMENT OPTIONS

[Interactively Controlling Switches](#)

[Interactively Controlling DMMs](#)

[SMU and Power Supply Setup, Control, and Optimization](#)

[Taking Interactive Measurements with an LCR Meter](#)

[Taking Measurements with Oscilloscopes](#)

[Generating Signals with Waveform Generators](#)

[Introduction to RF Signal Generation Acquisition and Analysis with NI RF Technologies](#)

[Measuring Power-Added Efficiency with Pulsed RF Measurement Library](#)

[Device Testing with Digital Pattern Instruments](#)



## Manage Data with DIAdem

This learning path is for engineers using DIAdem to quickly locate, inspect, analyze, and report on measurement data. It presents the courses, exams, and events that teach you how to import, view, and graphically investigate data; automate report generation; and extend the capabilities of DIAdem.

### GETTING STARTED

**01** Exploring Data Interactively Using DIAdem

Learn to use the most important analysis, reporting, and data management features of the DIAdem environment.

New DIAdem users can explore the most important analysis, reporting, and data management features of the DIAdem environment. Those interested in acquiring measurement data using the DIAdem environment should consider the DIAdem Data Acquisition and Control (DAC) course.



**02** Automating and Customizing Data Processing Using DIAdem<sup>1</sup>

Extend the capabilities of DIAdem software using the advanced VBScript and SUDialog capabilities of DIAdem.

<sup>1</sup>This course is available for both VBScript and Python versions.

For DIAdem users interested in extending the capabilities of DIAdem software, discover the advanced VBScript and SUDialog capabilities of DIAdem. Those interested in optimizing the speed of a script and minimizing maintenance should consider the DIAdem Customizing and Data Management course.

### ADDITIONAL OPTIONS

LabVIEW Core 1

Data Acquisition Using NI-DAQmx and LabVIEW

Automating and Customizing Data Processing Using DIAdem with Python\*

### BADGE ASSESSMENTS

DIAdem Data Exploration



# Semiconductor Test System Curriculum

Semiconductor production test engineers often are challenged to test more complex parts within a fraction of the time and budget. The STS Test Engineer Curriculum is a learning path consisting of three courses designed to teach semiconductor production test engineers quickly how to develop and debug configuration-based test programs, create custom measurements, and optimize advanced test programs for mixed-signal and RF devices using the NI Semiconductor Test System (STS).

## GETTING STARTED



### ADDITIONAL OPTIONS (FOR TEST ENGINEERS)

[Device Testing with Digital Pattern Instruments](#)

[LabVIEW Core 1](#)

[LabVIEW Core 2](#)

[Developing Test Programs Using TestStand](#)

### ADDITIONAL OPTIONS (FOR OPERATOR AND TECHNICIAN)

[STS Operator Training](#)

[STS Maintenance Technician Training](#)





## Using SystemLink™ Server to Manage Systems and Data

Learn how to use the SystemLink Server environment to manage test systems, deploy software, manage hardware assets, and collect and analyze test results.

### GETTING STARTED

01

Using SystemLink Server to Manage Systems and Data

Learn how to manage test systems, deploy software, manage hardware assets, collect, and analyze test results with SystemLink Server.

Explore SystemLink Server and components, and configure SystemLink software with your systems.

This is recommended for those who aim to efficiently manage, search, access, and analyze all measurement data.



02

Advanced Data Analysis and Integration with SystemLink Server

Utilize SystemLink Server for advanced data analysis with various tools including Jupyter Notebook, HTTP APIs, web interfaces, and JSON files.

Explore how to exchange data between SystemLink Server and other applications and manage third-party assets.

The course guides participants on automating file loading with Jupyter routines, as well as how to exchange data with third-party assets.

## Installing, Monitoring, and Upgrading SystemLink™ Enterprise

Get familiar with the technology, capabilities, and tools needed to install and manage SystemLink™ Enterprise deployments. Learn setup, installation into AWS or Azure, and upgrades. Gain key background knowledge, including microservices and third-party dependencies.

### INSTALLATION AND SETUP

01

Installing, Monitoring, and Upgrading SystemLink™ Enterprise

Learn the technology, capabilities, and tools needed to install and manage SystemLink™ Enterprise deployments.

Explore the setup, installation, and upgrades and key background knowledge, including microservices and third-party dependencies.

Recommended for IT professionals managing SystemLink™ Enterprise deployment.



## OptimalPlus Fundamentals (for Semiconductor)

The OptimalPlus Getting Started self-learning path is the perfect starting point for anyone who is new to NI OptimalPlus. This is your chance to get familiar with the NI OptimalPlus solution, as it provides a basic review of its Portal+, Rules+, and Control Room+ applications.

### GETTING STARTED

**01** Solution Intro  
+  
Data Management

Explore the OptimalPlus semiconductor solution, the value it brings, and the challenges we help our customers solve.

Learn the main purpose and features of each one of our applications and the value that each application brings.

The second part of this introduction phase covers the basics of working with OTDF files.

New OptimalPlus users can explore the value our applications bring using the power of big data analytics.

**02** Applications

Learn the basics of OptimalPlus applications.

With Portal+ introduction training, you will learn the first steps for performing a basic analysis in a Portal+ application. Drill down into your data by analyzing the parametric data over the unit-level data source.

In Rules+ introduction training, explore how the Rules+ application works and best practices for setting up your first rule.

Explore the Outlier Detection solution to learn how to use a virtual operation rule for outlier detection and then analyze rule results.

In Control Room+ introduction training, you are introduced to the Control Room+ application and receive an overview of how it works—along with best practices for first-time setup.

**03** Solution Creation  
+  
Data Extraction

Explore OptimalPlus data sources and custom data sources (only relevant for Vertica environments).

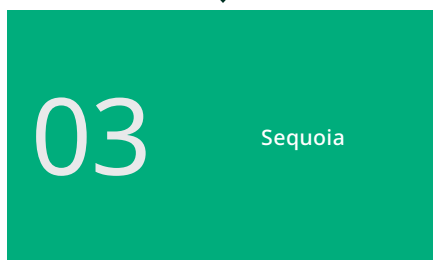
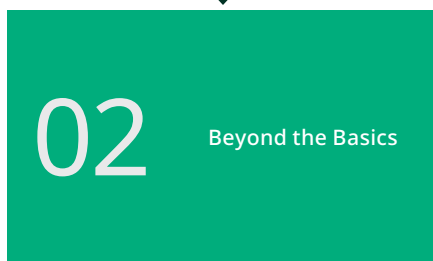
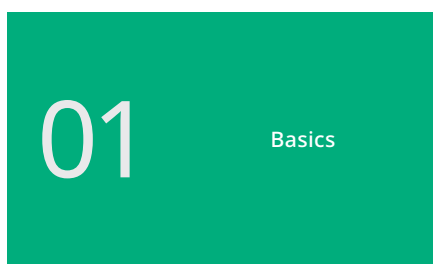
Learn how third-party systems can extract data from the OptimalPlus database without having to initiate the extraction process from the OptimalPlus application.

# OptimalPlus Semiconductor Global Operations

This learning path expands the introduction learning path and focuses on the Optimal+ Global Operations solution.

This learning path consists of Global Operations solutions courses and includes practical, hands-on sessions guided by product analytics OptimalPlus experts on customer data environments. This learning path explores how to harness the power of big data analytics to improve yield and productivity with an integrated view into your global manufacturing operations and processes.

## GLOBAL OPERATIONS



Get an integrated view of your global manufacturing operations and processes. Learn the basics of Portal+ and Rules+ applications, including how to execute a preliminary analysis on Portal+.

Explore our essential rules—Yield Monitor, Statistical Bin Limit, and Site-to-Site Yield Deviation—as well as our rules-execution methodology. Learn how to create a new rule against actual historical test data.

Get familiar with our best practices and learn hands-on tips for setting up your first dashboard and rule to establish automated operational monitors.

Explore our data flow from the automatic tester on the production floor to your dashboard.

New OptimalPlus users can explore the value our applications bring using the power of big data analytics.

Extend your basic skills of Portal+ and Rules+ applications and learn more about Portal+.

Explore the header right-click menu to enhance your dashboard's visualizations based on conditional formatting.

Learn how to set targets to detect issues and potential red flags across your global operations. Explore the rules data flow and create a custom query configuring generic rules. Detect outliers across entity types.

During the course, participants gain hands-on experience to apply their knowledge in real-world scenarios.

After getting familiar with the essentials, learn how to power up your skills.

Learn how to use NI OptimalPlus Sequoia structured scripting language to customize your data querying.

Develop your own scripts for manipulating and comparing data and automating big data mining to quickly identify ROI opportunities.

Write a dedicated script using Sequoia editor and debug it to simplify data manipulation, aggregation, and analysis.

Learn the highly flexible Sequoia rule and how to implement it into your operations and engineering projects. Power up your Sequoia skills by developing scripts on DB Sequoia and executing advanced analytics by using R and Python steps.

This course is composed of several lessons and hands-on practices.

We recommend this course to production, quality, and product engineers so that they automatically can identify and select specific data for a desired analysis, which can translate into a significant reduction in data-collection time and offers a tremendous opportunity to use the saved time to gain timely insights into hidden ROI opportunities and perform production-issue root cause analysis.

## OptimalPlus Semiconductor Global Operations+

The next evolutionary step would be to attend a VILT/ILT training course to learn how to implement Global Operations+ in a customer environment.

This learning path consists of Global Operation+ solutions courses and includes practical hands-on sessions guided by product analytics OptimalPlus experts in a customer-data environment to address process-related issues and increase quality and reliability by killing or downgrading outlier units.

### GLOBAL OPERATIONS+

**01** Escape Prevention  
+  
Escape Prevention  
Advanced

Address test processes and operational issues that impact quality and could lead to a test escape by implementing escape prevention rules.

Analyze data and manage the publication of validated escape rules to the test floor.

This course includes hands-on practice in online and offline decision-making rules configuration.

This course is recommended for quality engineers who ensure that only good products are shipped to their customers and no bad parts are treated as good ones due to test equipment or operation issues. The Escape Prevention course introduces both offline and actionable online rules.

**02** Outlier Detection

Address fabrication process-related issues to meet quality targets. Statistically analyze test data from multiple operations, utilizing proven part average testing algorithms to identify good outlier units.

Power up your OptimalPlus skills by learning how to execute outlier detection algorithms on test data using a predefined population. Explore how to integrate and combine these algorithms within a single rule recipe during multiple operations.

Learn how to automatically switch units to different bins when the rule is applied in production.

We recommend this for those who are responsible for increasing product quality and reliability.

**03** Adaptive Test-Time  
Reduction and NPI

Extend the capabilities of OptimalPlus using adaptive test simulation and new product introduction advanced capabilities.

Learn to combine traditional test-time reduction techniques with innovative intelligent adaptive testing in an entirely automated process. Learn how automatically to publish rules across your supply chain and identify candidate tests for removal (either stop/continue on fail) and how to communicate test element failures to all connected facilities to ensure zero defects.

Improve your product introduction and the ramp-to-volume process. Learn the NPI+ solution and improve time to market by shortening NPI. Explore the NPI+ capabilities to analyze and chart the behavior of a new device based on parametric and functional measurements made across multiple processes, voltage, and temperature conditions.

This is for those looking to reduce test time without compromising quality, yield, or reliability.

Reach your yields faster and more efficiently by shortening the characterization and ramp phases of new product introduction.



## OptimalPlus Semiconductor “Train The Trainer” Program

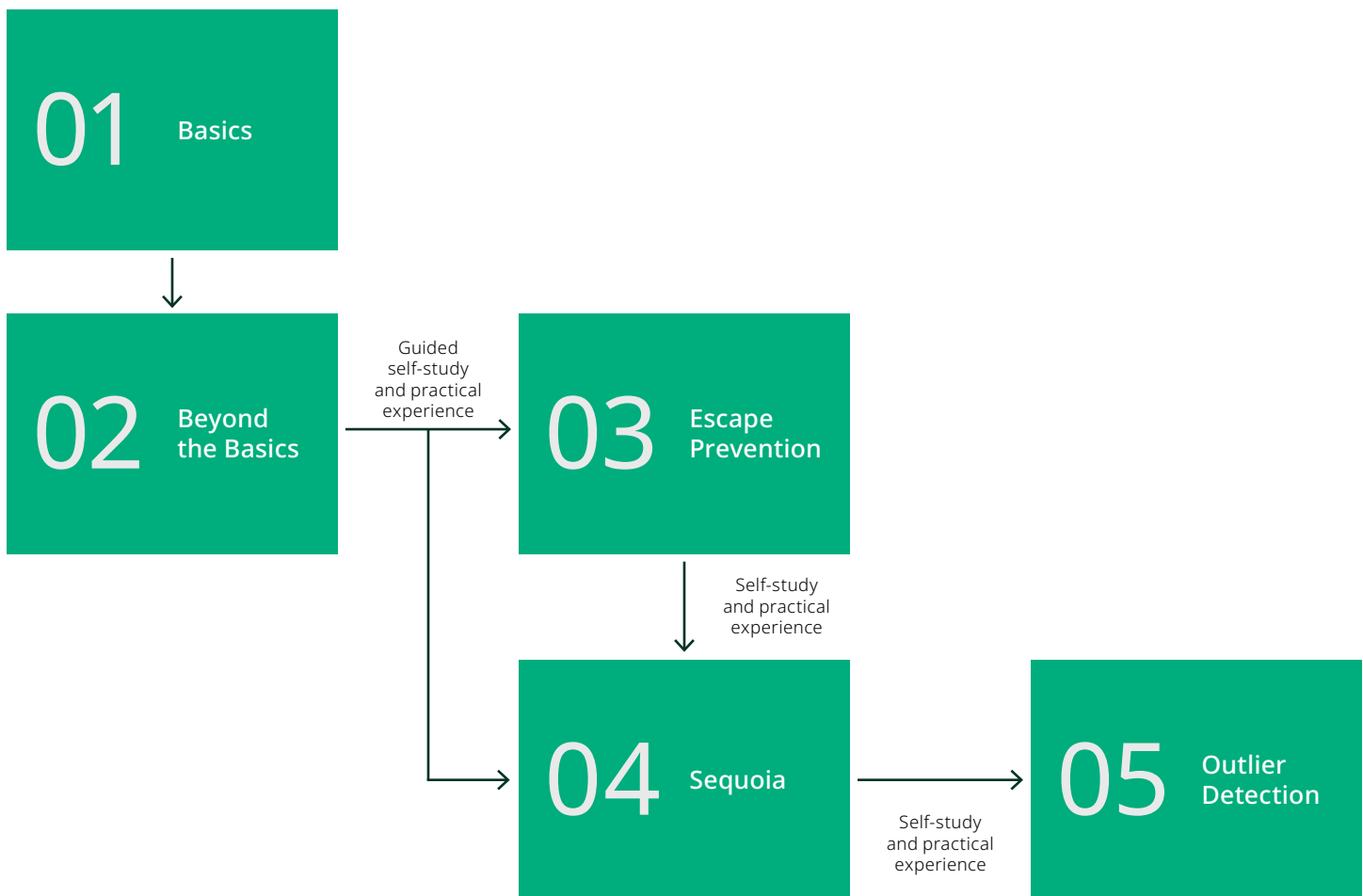
This program aims to identify and train NI OptimalPlus users (trainer candidates) to be trainers for other/new users and be the first point of contact for product analytics OptimalPlus tools queries.

The Train the Trainer program is a training framework that turns customers’ users into subject matter experts who can teach other users within their organization.

This program includes guided hands-on sessions, certification tests on selected phases, and guided self-study with an NI OptimalPlus applications engineer expert.

### TRAIN THE TRAINER

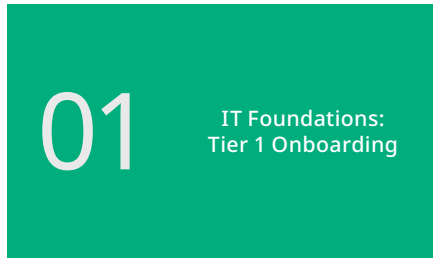
Elevate your OptimalPlus skills and become an OptimalPlus trainer in your own company.



## OptimalPlus Semiconductor IT Tier 1 Onboarding

This program aims to identify and train customer IT system admin users to be the first point of contact for OptimalPlus IT Tier 1 queries.

### IT FOUNDATIONS: TIER 1 ONBOARDING



This fundamental training program provides foundational concepts, principles, and techniques to gain a solid understanding and proficiency in OptimalPlus IT Non-Semiconductor T1 basic support.

This is recommended for those who support OptimalPlus users and its infrastructure.

## OptimalPlus Non-Semiconductor IT Tier 1 Onboarding

This program aims to identify and train customer IT system admin users to be the first point of contact for OptimalPlus Non-Semiconductor IT Tier 1 queries.

### IT FOUNDATIONS: TIER 1 ONBOARDING



This fundamental training program provides foundational concepts, principles, and techniques to gain a solid understanding and proficiency in OptimalPlus IT Non-Semiconductor T1 basic support.

This is recommended for those who support OptimalPlus users and its infrastructure.

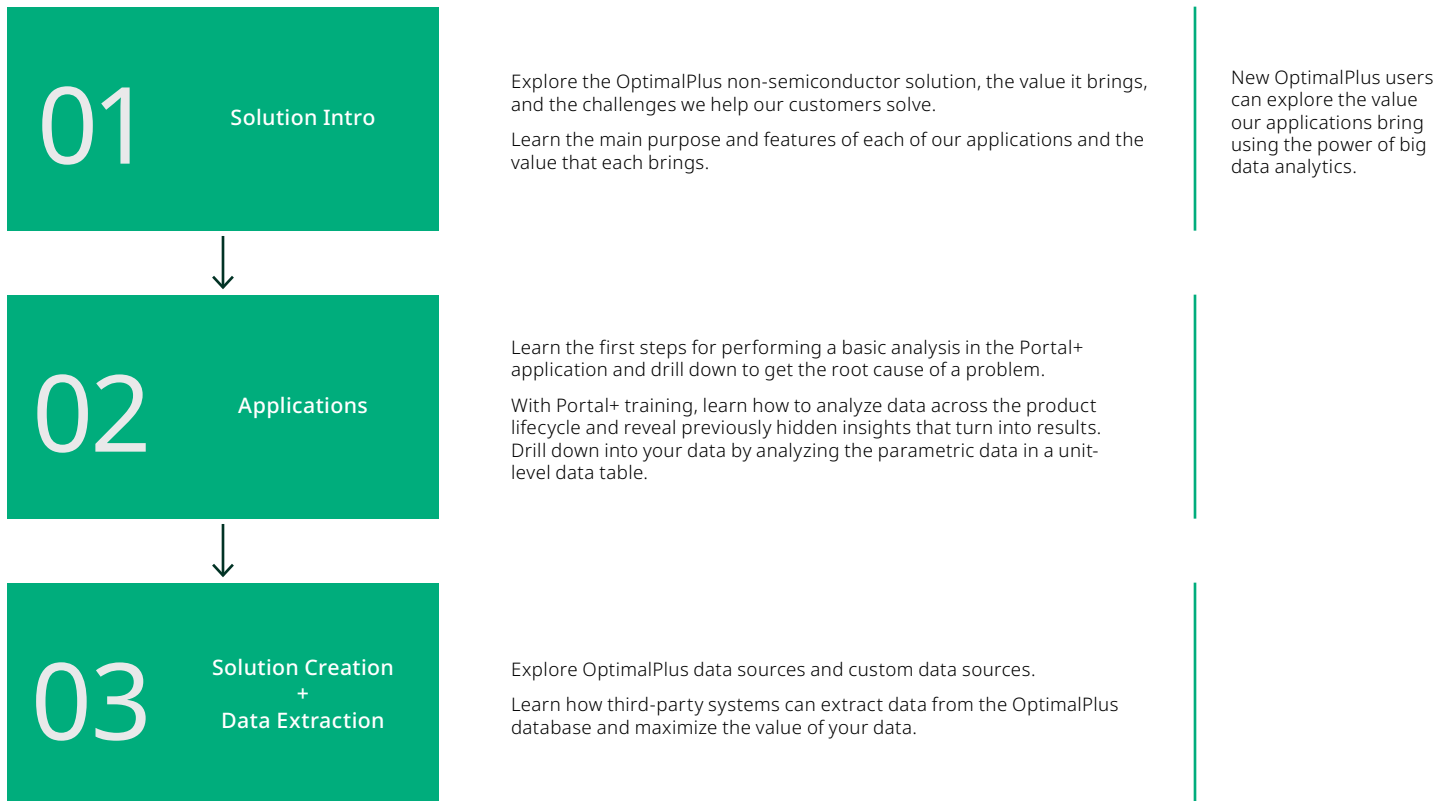




## OptimalPlus Fundamentals (For Non-Semiconductor)

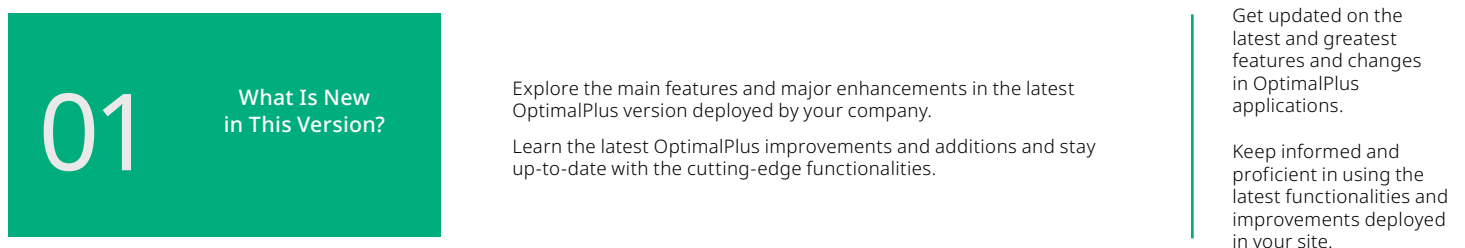
This learning path consists of OptimalPlus non-semiconductor solutions. Explore the value it brings and the challenges we help our customers solve. Drill down into your data by analyzing Portal+ dashboards.

### GETTING STARTED



## What Is New in Specific OptimalPlus Applications?

### OPTIMAL PLUS APPLICATIONS



# Flexible Purchase Options

NI provides flexible options for purchasing training and certification. Whether you want to make an upfront investment or pay as you go, NI has offerings to meet a variety of budgetary needs. Most offerings can be purchased at [ni.com/training/buy](https://ni.com/training/buy), or purchase custom or private training offerings by contacting NI at [services@ni.com](mailto:services@ni.com).

## Save Money with a Training Membership

A training membership is a cost-effective way to take multiple instructor-led training courses. This program provides one year of unlimited access—for one registered user—to instructor-led training and online certification exams.

## Buy Credits Now, Schedule Later

Purchase education services credits now and redeem them later for any training or certification offering. Education services credits expire after one year.

## Secure a Seat in a Public Course

View [NI's global training calendar](#) and secure a seat in an upcoming virtual or classroom instructor-led course. You can request the course by completing [this form](#).

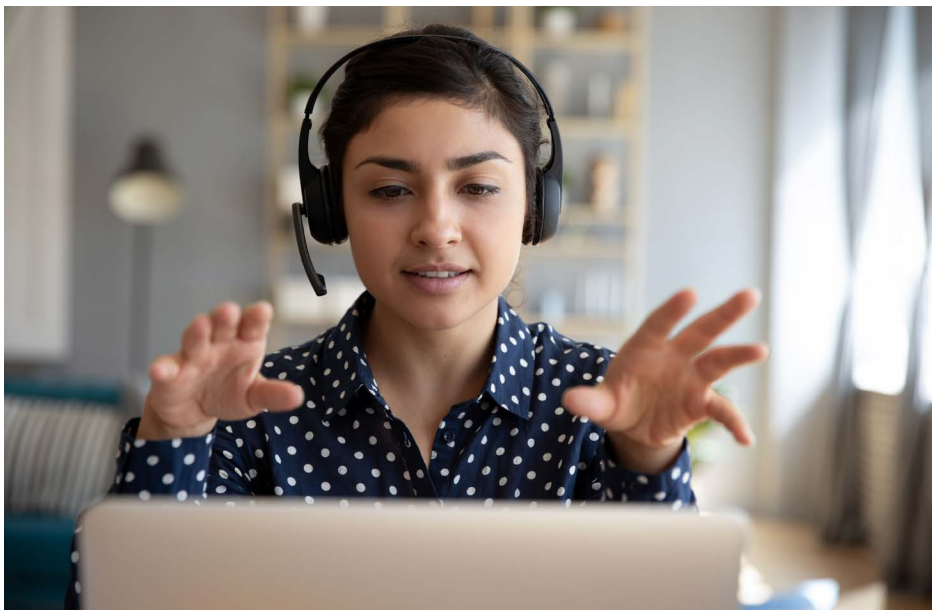
## Take Advantage of On-Demand Learning

NI software licenses include one-year access to introductory on-demand learning content so you can onboard quickly. Purchase additional on-demand courses at [ni.com/training/buy](https://ni.com/training/buy).

To find out what on-demand training your license includes, view the knowledge base article, "[Which Online Training Courses Can I Access Based on My NI Service Contract?](#)".

## Organize a Private Training Event

NI offers private training events for teams of up to 12 students. Private training events can leverage standard NI training courses and include custom materials tailored to your needs. You can request private training by completing [this form](#).



## Explore the NI Learning Center

With hundreds of on-demand lessons and application-focused learning paths, the NI Learning Center makes it quick and easy to learn new skills.

Check it out today at [learn.ni.com](https://learn.ni.com).





# Invest Upfront and Use Later

NI offers two options for customers to pay upfront for training and certification. For individuals seeking to pay upfront for unlimited instructor-led training and certification options, NI offers the training membership program. Both individuals and team managers can purchase a bulk quantity of education service credits and redeem them for any education services offering, for any user, within one year of purchase.

## Education Service Credits

These are designed for individuals or groups that want to purchase training for multiple employees or team members, but need the flexibility to decide who participates in the training, and when. You can use credits to purchase:

- Instructor-led training (public/private) in virtual or classroom format
- On-demand training
- Certifications

Credits are recommended for large projects, volume license agreements, and end-of-year budget spending. Visit [ni.com/training](https://ni.com/training) for more information about education service credits.

## Training Membership

Training memberships provide unlimited access to all NI public classroom and public virtual courses, along with unlimited certification vouchers. This can translate to cost savings if you are planning to take multiple instructor-led courses within one year. A training membership is a one-time purchase that does not renew. Visit [ni.com](https://ni.com) for more information about a training membership.

# Learning Formats

With our learning programs, you have control over how you receive your training, allowing you to accommodate your specific learning preferences.

NI offers courses in several languages and formats, including classroom training at facilities worldwide or on-site at your facility, on-demand courses, and virtual training to better serve your individual needs. Whichever course format you choose, NI training courses can help you achieve immediate productivity gains and long-term success. Visit [ni.com/training/options](https://ni.com/training/options) for more details about learning formats.

Learning Format	Description	Price (USD)**	Education Services Credits (ESC)	Legacy Training Credits (TC)
On-Demand	Online course that includes prerecorded videos, demonstrations, and quizzes. Available in a 12-month subscription.	\$500 USD/ subscription	5 ESC/subscription	2 TC/subscription
Public Classroom	A training course on our calendar that is open to the public for registration and delivered at a physical NI training center. Delivered in full days (8 hours).	\$1,000 USD/ day/student	10 ESC/day/student	3 TC/day/student
Public Virtual*	A training course on our calendar that is open to the public for registration and delivered virtually.			
Private Classroom	A training course that is hosted for a specific group of users at an account, often at the customer's site. Delivered in full days (8 hours).	\$7,000 USD/day/ up to 12 students	70 ESC/day/ up to 12 students	20 TC/day/ up to 12 students
Private Virtual*	A training course that is hosted for a specific group of users at an account but virtually. Delivered in half days (4–6 hours).	Software: \$7,000 USD/day/ up to 12 students	Software: 70 ESC/day/up to 12 students	Software: 20 TC/day/ up to 12 students
		Hardware: \$4,000 USD/day/ up to 6 students <sup>1</sup>	Hardware: 40 ESC/day/ up to 6 students <sup>1</sup>	Hardware: 12 TC/day/ up to 6 students <sup>1</sup>
Hardware-based private virtual courses have a maximum of six students to ensure a better customer experience.				
Private Classroom Configured	Delivered in the private classroom format, using NI standard training content that is reconfigured to better meet the needs of the audience. Delivered in full days (8 hours).	\$8,400 USD/day/ up to 12 students	84 ESC/day/ up to 12 students	25 TC/day/ up to 12 students
Private Virtual Configured	Delivered in the private virtual format, using NI standard training content that is reconfigured to better meet the needs of the audience. Delivered in half days (4–6 hours).			

\*Exceptions to virtual instructor-led training apply; please refer to [ni.com](https://ni.com) for final pricing.

\*\* Prices listed in this catalog are approximate. For the current price, please contact [services@ni.com](mailto:services@ni.com).

## Scheduled Virtual and Classroom Training

NI offers public virtual and classroom training courses so that you can learn with peers who have the same professional interests. [Learn more about these virtual or in-person classroom courses.](#)



# Education Services Courses

Become familiar with NI hardware and software by attending our training courses.

Education services courses are available for new and experienced users in the form of on-location and virtual classrooms, labs, and collaborative sessions. Topics include working with LabVIEW, TestStand, VeriStand, FPGA, and data acquisition hardware, and more.

## Instructor-Led Training Courses

**Proficiency:**  Advanced  Intermediate  Introductory

Standard Courses	Instructor-Led Learning Formats				Instructor-Led Learning Formats			
	Education Services Credits (ESC)				Duration (Days)			
	Public Classroom	Private Classroom	Public Virtual	Private Virtual	Public Classroom	Private Classroom	Public Virtual	Private Virtual
Actor-Oriented Design in LabVIEW	30	210	30	210	3	3	4	4
Architecting Test Systems Using TestStand	20	140	20	140	2	2	3	3
Automating and Customizing Data Processing Using DIAdem (Previously DIAdem Advanced)	20	140	20	140	2	2	3	3
Automating and Customizing Data Processing Using DIAdem with Python	20	140	20	140	2	2	3	3
Data Acquisition Using NI-DAQmx and LabVIEW	20	140	20	140	2	2	3	3
Developing Embedded Applications Using CompactRIO and LabVIEW Real-Time	40	280	40	160	4	4	5	5
Developing Embedded Applications Using CompactRIO and LabVIEW FPGA	30	210	30	120	3	3	4	4
Developing Machine Vision Systems with VBAI	30	210	30	210	3	3	4	4
Developing Test Programs Using TestStand	30	210	30	210	3	3	4	4
Exploring Data Interactively Using DIAdem (Previously DIAdem Basics)	30	210	30	210	3	3	4	4
HIL Fundamentals Using VeriStand	30	210	30	120	3	3	4	4
LabVIEW Core 1	30	210	30	210	3	3	5	5
LabVIEW Core 2	20	140	20	140	2	2	3	3
LabVIEW Core 3	30	210	30	210	3	3	4	4
LabWindows/CVI Core 1	30	210	30	210	3	3	4	4
LabWindows/CVI Core 2	20	140	20	140	2	2	3	3
Object-Oriented Design and Programming in LabVIEW	30	210	30	210	3	3	4	4
Test Code Module Development with STS and .NET/C#	20	140	20	80	2	2	3	3



Standard Courses	Instructor-Led Learning Formats				Instructor-Led Learning Formats			
	Education Services Credits (ESC)				Duration (Days)			
	Public Classroom	Private Classroom	Public Virtual	Private Virtual	Public Classroom	Private Classroom	Public Virtual	Private Virtual
Test Code Module Development with STS and LabVIEW	30	210	30	120	3	3	4	4
Test Program Development with STS and .NET/C#	30	210	30	120	3	3	4	4
Test Program Development with STS and LabVIEW	30	210	30	120	3	3	4	4
Installing, Monitoring, and Upgrading SystemLink™ Enterprise	Please contact <a href="mailto:services@ni.com">services@ni.com</a> for pricing and duration.							
High-Performance LabVIEW FPGA								
STS Operator								
STS Maintenance								
Calibration Executive								

Legacy Training Credits (TC), mainly used within Enterprise Agreements (EA), have specific amounts. For more details, [Learn more](#).

## On-Demand Learning Courses

Course Name	Education Services Credits (ESC)
Acoustic Test Fundamentals	FREE
Architecting Test Systems Using TestStand	5
Advanced Data Analysis and Integration with SystemLink™ Server	5
Automating and Customizing Data Processing Using DIAdem (Previously DIAdem Advanced)	5
Automotive Communication Using the Vehicle Communication Toolkit	5
Automotive Communication with NI-XNET	5
Automotive HIL	5
BTS Test Station Configuration and Test Development	FREE
Battery Test System Safety and Maintenance Procedures	FREE
Course Updates and New Features: LabVIEW 2022 Q3	FREE
Course Updates and New Features: VeriStand 2021 Release	FREE
Creating Autonomous Vehicle Simulations Using monoDrive	FREE
Creating Web Applications Using G Web Development Software	5
Data Acquisition Using NI-DAQmx and LabVIEW	5
Data Record AD System Configuration and Setup	5
Datalogging with FlexLogger Software	FREE
Developing Machine Vision Systems with VBAI	5
Developing Test Programs Using TestStand	5
Device Testing with Digital Pattern Instruments	5
ECU Test System Safety and Maintenance Procedures	5





Course Name	Education Services Credits (ESC)
Exploring Data Interactively Using DIAdem (Previously DIAdem Basics)	5
Generating Signals with Waveform Generators	5
HIL Fundamentals Using VeriStand	5
Integrating the NI VCSEL I-V Test Subsystem	5
Interactively Controlling DMMs	5
Interactively Controlling Switches	5
Introduction to MeasurementLink™	FREE
Introduction to NI Audio and Acoustics Test Software	FREE
Introduction to RF Signal Generation Acquisition and Analysis with NI RF Technologies	FREE
Inverter HIL Test System Training	5
LabVIEW Connectivity	5
LabVIEW Core 1	5
LabVIEW Core 2	5
LabVIEW Core 3	5
LabWindows/CVI Core 1	5
Measuring Power-Added Efficiency with Pulsed RF Measurement Library	FREE
Measuring Wafer-Level Reliability	5
mmWave Test with STS (.NET/C#) (Previously mmWave Test with STS)	5
Multisim Basics	5
Object-Oriented Design and Programming in LabVIEW	5
OptimalPlus Fundamentals	Only with software purchase
PAtools Foundation and Overview	FREE
PXI System Setup and Maintenance (Previously PXI System Setup)	5
PXI Timing and Synchronization	5
RFIC Test with STS and .NET/C# (Previously RFIC Test with STS)	5
RFIC Test Software for RF Front-End Design Validation	FREE
Semiconductor Device Control Add-On for DUT Validation	FREE
Setting Up, Acquiring Data, and Maintaining Your CompactDAQ System	5
SLSC Fundamentals	5
SMU and Power Supply Setup, Control, and Optimization	5
Software Engineering for Test Applications	5
Software License Management Using NI VLM	FREE
Taking Interactive Measurements with an LCR Meter	5
Taking Measurements with Oscilloscopes	5
Test Code Module Development with STS	5
Test Program Development with STS	5
Ultiboard Basics	5
Using Open-Source Tools with USRP Hardware for SDR Applications	FREE
Using SystemLink™ Software to Manage Systems and Data	FREE

# Accelerate learning and promote your accomplishments with NI badges.

Find learning resources and gain skills related to your application. Track your knowledge growth with milestone badge assessments and professional certifications. And share your successes with others on social media and job sites.

## What Is a Badge?

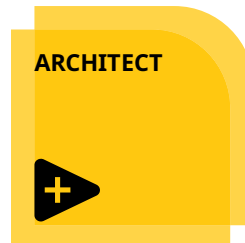
A badge is a digital credential that NI issues to you in recognition of your accomplishments, such as passing an assessment, exam, or audit. These digital credentials contain verified, personalized information, including details on the exam you passed to earn your certification or your skills tested in an application area.

### NI BADGES



#### LEARNING BADGES

Discover engineering fundamentals and NI product best practices through on-demand learning, and then test your understanding with self-assessments and share your success.



#### PROFESSIONAL CERTIFICATION

Demonstrate that you have the skills needed to create high-quality applications with NI software. Share your skills on social media and job sites and advance your career.



#### COMMUNITY ADVOCACY

Gain recognition for technical leadership, participation in, and contributions to the NI user community and NI's expansive ecosystem of tools and expert developers.

## Promote Your Accomplishments

You can hyperlink a badge image file to the digital credential containing your unique, verified data. This makes badges more secure than paper-based certificates and eliminates the possibility of anyone claiming your credential. Adding a hyperlinked badge image to your email signature and sharing your badge on social media and job sites are great ways to make sure your professional network is aware of your accomplishments.

## Badge Benefits

With badges, you can solicit feedback on your learning and uncover the next steps in your skill progression, because employers, peers, and customers instantly can verify your skills. And badges are an easy way to share your achievements on a variety of social media platforms. Have questions? Email us at [services@ni.com](mailto:services@ni.com).



## Challenge yourself and test your understanding with NI learning badges.

Complement NI courses and certifications with learning badge self-assessments to track your knowledge growth and find additional content related to your application. Test your understanding of engineering fundamentals and best practices using NI products with these free online assessments.

### Use learning badges to:

- Prepare for NI certification exams.
- Identify knowledge gaps before starting a new project.
- Optimize your self-paced learning and target topics specific to your needs.

### How Do Learning Badges Work?

1. Select a badge related to your projects and review the available learning resources.
2. Take the free, open-book, untimed assessment.
3. Earn all of the badges on a badge learning path and receive the high-level badge for that path.
4. Follow instructions from Credly to share your badges with others on social media and job sites.

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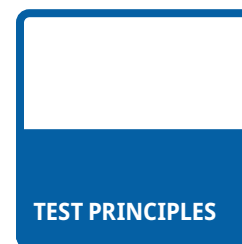
### CHOOSE A BADGE LEARNING PATH THAT BEST FITS YOUR APPLICATION NEEDS



Automate simple tasks and take basic measurements on a one-off basis. Build a simple looping or sequencer VI from scratch.



Take ad-hoc engineering measurements using LabVIEW and NI data acquisition hardware. Build a custom measurement solution to acquire and visualize real-world signals.



Build a foundation of test and measurement principles to help you test multiple products with a test platform.

Visit [ni.com/badges](https://ni.com/badges) to take a free learning badge assessment.

# Validate your skills and advance your career with certifications.

Certification demonstrates that you have the skills to create high-quality applications with NI software and gives customers, peers, and employers confidence in your abilities. NI offers certifications that are standardized globally, allowing for secure and uniform testing across teams, organizations, or countries. You can use certification to assess and validate an individual's skills for the purpose of project staffing or career advancement.

## **CLAD | Certified LabVIEW Associate Developer**

The CLAD certification indicates a broad working knowledge of the LabVIEW environment, a basic understanding of coding and documentation best practices, and the ability to read and interpret existing code.

## **CLD | Certified LabVIEW Developer**

The CLD certification indicates the ability to design and develop functional programs while minimizing development time and ensuring maintainability through proper documentation and style.

## **CLA | Certified LabVIEW Architect**

The CLA exam tests the user's ability to build a sensible VI hierarchy and project plan for delivering an application that meets project requirements. Certified Architects can design the application architecture and manage the development of the individual components by other engineers.

## **CLED | Certified LabVIEW Embedded Systems Developer**

A CLED demonstrates expertise in designing, developing, debugging, and deploying applications based on CompactRIO, Single-Board RIO, and/or R Series

hardware. A CLED efficiently uses the LabVIEW Real-Time and LabVIEW FPGA modules with NI-recommended best practices to design modular, scalable, and maintainable embedded systems to requirements.

## **CTD | Certified TestStand Developer**

The first step in the two-part TestStand certification process, the CTD measures the ability to develop, debug, and deploy functional applications in TestStand software while minimizing development time and ensuring maintainability.

## **CTA | Certified TestStand Architect**

The final step in the two-part TestStand certification process, the CTA shows a user's expertise in architecting test systems in TestStand based on high-level specifications. Certified Architects can design the application architecture and manage the development of individual components by other engineers.

## **Certified Professional Instructor**

The CPI certification distinguishes individuals who are authorized to teach NI courses. CPIs are the only non-NI instructors authorized to teach NI courses. Through teaching courses, CPIs can identify business opportunities and position themselves as an expert in their field.



CERTIFICATION EXAM FORMATS	MULTIPLE CHOICE	PRACTICAL	PREREQUISITES	EXAM DURATION	RECERTIFICATION INTERVAL	EDUCATION SERVICES CREDIT (ESC)
Certified LabVIEW Associate Developer	■		None	1 Hour	2 Years	1
Certified LabVIEW Developer		■	None	4 Hours	3 Years	3
Certified LabVIEW Architect		■	CLD	4 Hours	4 Years	3
Certified LabVIEW Embedded Systems Developer	■	■	CLD or CLA	1 Hr + 5 Hr	5 Years	1 + 3
Certified TestStand Developer		■	None	4 Hours	3 Years	3
Certified TestStand Architect	■		CTD	1 Hour	4 Years	1
Certified Professional Instructor		■	CLD/CTD/ or Higher	8 Hours	Subject to Contract	N/A

## Prepare for an exam

Preparing for your exam is easy with resources such as preparation guides, webcasts, sample exams, and solutions. Visit [ni.com/certification-prep](https://ni.com/certification-prep) and select your exam of interest to view the preparation guide.

## Register for an exam

NI certification exams are offered online, giving you the convenience to take the exam from home or the office in a secure online environment.

Ready to take an exam? Start here:

1. Visit [NI Certification Program](#) or [NI Learner Dashboard](#) to begin.
2. Read the details about the [NI Certification Program](#) and select the exam you're interested in.
3. Make sure you have met the prerequisite for taking your desired exam.
4. Start your online exam registration by selecting Schedule an Exam.
5. If you do not have an NI profile, you will be asked to create one. Without an NI profile, you will not be able to schedule your exam.
6. We recommend that you review the [Exam Taker Guide](#) before scheduling your exam to get familiar with the process.

If you have any questions, please contact [services@ni.com](mailto:services@ni.com).

## Not Quite Ready for an Exam?

If you would like to spend more time covering exam topics, explore the NI Badge Program. Assess your skill level with NI badge assessments and view recommended learning material as you progress through a badge path.

Visit [ni.com/badges](https://ni.com/badges) to learn more.

# NI Global Services and Support

NI complements its industry-leading products with services from experts around the globe to help you achieve your goals. Whether your challenges are simple or complex, NI can help you maximize productivity and reduce costs with services such as training, technical support, consulting and integration, and hardware services.

At NI, we are creative problem-solvers, always seeking to help one another to be more effective. Please don't hesitate to contact us if we can help you adapt your learning path to your needs.

## Software Services

Maximize the use of NI software by leveraging services such as technical support, online training, flexible licensing, and asset management.

## Hardware Services

Minimize downtime, save on repair costs, and ensure measurement accuracy with world-class service programs for hardware.

## Education Services

Develop 50 percent faster and spend 43 percent less time on code maintenance with NI training courses. Also validate your expertise with NI certifications.

## Technical Support Services

Get started with NI products faster or troubleshoot tough issues by contacting NI applications engineers who are ready to help via phone and email.

## Professional Services

Leverage our extensive network of NI Partners and NI engineers for assistance with prototyping, feasibility analysis, consulting, and systems integration.

## Technical Resources

Access volumes of self-help information at [ni.com](https://ni.com), including application tips, example programs, and developer communities.

## Enabling Success Every Step of the Way

Take advantage of services that meet your needs in any phase of the application lifecycle, from planning and development through deployment and ongoing maintenance.

- Professional technical support
- Online and classroom-based training courses
- Software upgrades and updates
- Hardware repair and calibration
- System assembly and test
- Prototyping and feasibility analysis
- Consulting and development assistance

## Disability and Accessibility

We're in this together! NI endeavors to provide training courses accessible to the widest possible audience, regardless of technology or ability.

