

Training Courses for Hardware-in-the-Loop Test Applications

Overview

Get started quickly on your hardware-in-the-loop (HIL) application with help from NI's extensive library of training courses. At NI, we pride ourselves on being first to measurement and first to automation with our systems. And we can help you accelerate the speed of deploying a system with our worldwide training courses. The time and cost savings you realize by increasing deployment speed can help you quickly offset the initial investment of time and money in training.

Choose among 26 different courses in a live classroom format around the world with 13 online as well if you lack the time or resources for an instructor-led training program. Select from several different recommended courses to help you deploy your NI system, depending on your requirements.

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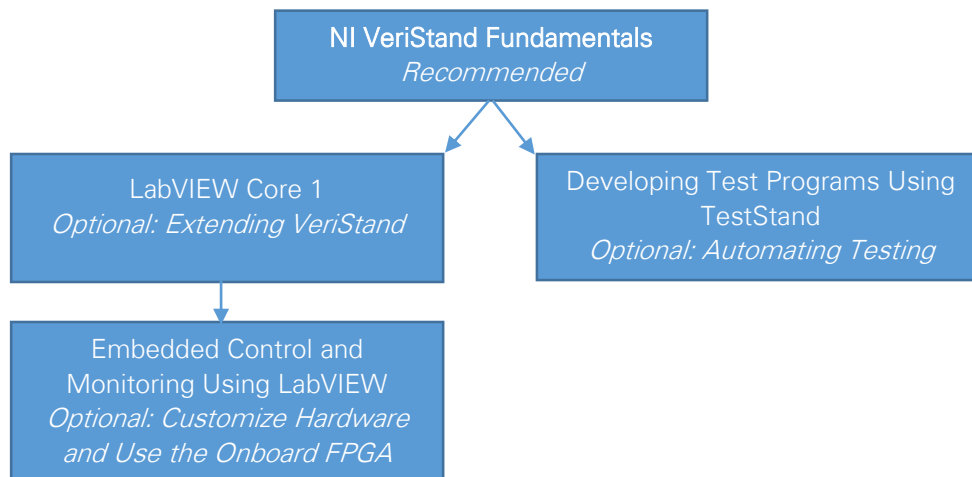
Recommended Training Program

An NI HIL system is composed of VeriStand software and either PXI or CompactRIO hardware systems; therefore, every HIL training program should begin with NI VeriStand Fundamentals to learn the basics of configuring and deploying a system.

After you understand the basics, there are several courses you can choose, depending on your application requirements.

To take full advantage of the ability to add custom functionality to VeriStand using LabVIEW software, you should take LabVIEW Core 1. Additionally, in the Embedded Control and Monitoring Using LabVIEW course, you can gain further insight into custom programming and the FPGA technology in NI hardware that aids in the creation of custom protocols or simulating plant models at much faster rates than in the real-time OS alone.

Finally, TestStand is software that you can use to automate HIL testing, and the Developing Test Programs Using TestStand course gives you the ability to call into the VeriStand .NET APIs to automate your own testing.



Recommended Course

NI VeriStand Fundamentals

Learn how to use the out-of-the-box features of VeriStand to develop real-time testing applications such as hardware-in-the-loop test systems. Receive an introduction to real-time testing and walk through building a VeriStand test system that includes real-time simulation, hardware I/O, and alarming. Also learn how to create sophisticated real-time stimulus profiles to stimulate a device under test and log its responses to a variety of real-world conditions.

Key Objectives

- Develop a real-time test system using VeriStand
- Create a run-time editable user interface for your real-time test system
- Create and modify stimulus profiles and real-time sequences using the Stimulus Profile Editor

Optional Classes

LabVIEW Core 1

LabVIEW Core 1 is the first step in any LabVIEW learning path. Here, you get the chance to explore the LabVIEW environment, dataflow programming, and common LabVIEW development techniques in a hands-on format. Learn to develop data acquisition, instrument control, data-logging, and measurement analysis applications. At the end of the course, you will be able to create applications using the state machine design pattern to acquire, process, display, and store real-world data.

Key Objectives

- Learn how to develop basic applications in the LabVIEW graphical programming environment
- Create applications using a state machine design pattern
- Read and write data to file

Embedded Control and Monitoring Using LabVIEW (Classroom Only)

The Embedded Control and Monitoring Using LabVIEW course delivers training for designing, prototyping, and deploying a reliable embedded control and monitoring application. At the end of the course, you will be able to translate your embedded system requirements into a scalable software architecture, choose appropriate methods for interprocess and network-based communication, design your real-time application for reliability, and efficiently deploy and replicate your embedded system.

This is a five-day classroom training replacement for LabVIEW Real-Time 1, LabVIEW Real-Time 2, and LabVIEW FPGA training courses. However, these courses are still available in the online format.

Key Objectives

- Design, prototype, and deploy an embedded control and monitoring application
- Acquire and generate analog and digital signals, control timing, and implement signal processing on real-time and FPGA
- Implement additional functionality on the real-time target for logging, network communication, system health monitoring, and reliability using the LabVIEW Real-Time Module

LabVIEW Real-Time 1 (Online Only)

The LabVIEW Real-Time 1 course delivers training for prototyping deterministic measurement and control systems. At the end of the course, you will be able to design, develop, and prototype a real-time application that handles communication between the real-time target and a host computer using NI-recommended methods and the LabVIEW Real-Time Module.

Key Objectives

- Choose and configure the real-time target hardware for a given real-time application
- Implement a deterministic application
- Communicate between a host computer and real-time target using network communication

LabVIEW Real-Time 2 (Online Only)

The LabVIEW Real-Time 2: Architecting Embedded Systems course delivers training for designing scalable, maintainable, and reliable embedded applications. At the end of the course, you will be able to translate your embedded system requirements into a scalable software architecture, choose appropriate

methods for interprocess and network-based communication, design your real-time application for reliability, and efficiently deploy and replicate your real-time systems.

Key Objectives

- Identify requirements and design a real-time application
- Implement the most appropriate method of sharing data locally on the real-time target between multiple processes
- Implement the most appropriate method of communicating between real-time targets and host computers over the network
- Implement a variety of techniques to increase the reliability of a real-time application

LabVIEW FPGA (Online Only)

The LabVIEW FPGA course prepares you to design, debug, and implement efficient, optimized applications using the LabVIEW FPGA Module and reconfigurable I/O (RIO) hardware. Learn how to compile and deploy your VIs to different types of NI targets, such as R Series multifunction RIO, CompactRIO, Single-Board RIO, and NI RIO instruments. Develop applications where you learn to acquire digital and analog I/O, control loop timing, synchronize operations, implement signal processing, and pass data between your host VI and your FPGA target.

Key Objectives

- Create and compile your LabVIEW FPGA VI and download to NI RIO hardware
- Acquire and generate analog and digital signals, control timing, synchronize operations, and implement signal processing on the FPGA
- Communicate between the FPGA and a host
- Design and implement applications using the LabVIEW FPGA Module

Developing Test Programs Using TestStand

The Developing Test Programs Using TestStand course teaches you how to navigate the TestStand environment and quickly create test applications that satisfy your test needs using different design languages. This course prepares you to use TestStand features and best practices to create and deploy test sequences as a complete test system.

Key Objectives

- Develop modular test applications in the TestStand environment and distribute them to test stations
- Develop test code in LabVIEW or LabWindows™/CVI software and call that test code from TestStand
- Use TestStand debugging tools
- Execute a test sequence and generate a test report
- Configure TestStand to test devices in series or in parallel

Next Steps

- [Browse the Customer Education Course Catalog](#)
- [See the recommended training path online and schedule classes near you](#)