

# LabVIEW Instrument Control Course

## Overview

The LabVIEW Instrument Control course prepares you to programmatically control instruments using LabVIEW. The benefits of instrument control include automated processes, time savings, and ease of use. During the course, you will examine real-world industry examples, and learn to use virtual instrumentation software architectures (VISA) – a single interface to configure and control GPIB, Ethernet, serial, and VXI instruments. You will also use, modify and build a LabVIEW Plug & Play instrument driver: a set of commands contained in a modular API for an individual instrument. After you complete the course, you can quickly develop integrated, high-performance instrument control applications that produce accurate measurements.

## Duration

Two Days

## Audience

- Application developers using LabVIEW to control computer-based instruments via GPIB, serial, or other communication protocol

## Prerequisites

- Experience with Microsoft Windows
- LabVIEW Basics I: Introduction course or equivalent experience

## NI Products Used During the Course

- LabVIEW Professional Development System Version 8.5
- IEEE 488.2 (GPIB) board
- NI Instrument Simulator

## After attending this course, you will be able to:

- Use LabVIEW to communicate with instruments
- Program with VISA, VISA properties, and VISA events
- Parse data
- Use instrument drivers
- Modify an existing instrument driver
- Design, develop, test, and deploy a new instrument driver
- Create an effective and efficient instrument control application

## Registration

Register online at [ni.com/training](http://ni.com/training), or call (800) 433-3488 Fax: (512) 683-9300 [info@ni.com](mailto:info@ni.com)

Outside North America, contact your local NI Office.  
Worldwide Contact Info: [ni.com/global](http://ni.com/global)

## Part Number

910557-xx  
-01 NI Corporate or Branch  
-11 Regional  
-21 Onsite (at your facility)

## Suggested Next Courses

- LabVIEW Basics II: Development
- LabVIEW Intermediate I: Successful Development Practices
- IVI Instrument Driver Development

# LabVIEW Instrument Control Course

## Day 1

### Industry Applications

This lesson introduces the benefits of instrument control and shows industry applications using instrument control. Topics include:

- Introduction to instrument control
- Benefits of instrument control
- Instrument control example
- Industry applications using instrument control

### Communicating with Instruments

This lesson describes how you can use LabVIEW to communicate with instruments. You will learn how to use NI-VISA, NI Spy, SCPI commands, and the Instrument I/O Assistant to perform instrument I/O.

Topics include:

- Comparing instrument buses
- Connecting to instruments
- Monitoring bus activity with NI Spy
- Communicating with your instrument using the VISA API
- Parsing data
- Using the Instrument I/O Assistant

### Using Instrument Drivers

This lesson introduces LabVIEW Plug & Play instrument drivers. You will learn when to use instrument drivers, how to install instrument drivers, and how to program with instrument drivers. Topics include:

- Introduction to instrument drivers
- When to use instrument drivers
- Installing an instrument driver
- Using an instrument driver

### Modifying an Existing Instrument Driver

If an instrument driver is lacking a feature you need, you will need to modify it. This lesson describes how to modify an existing instrument driver. Topics include:

- When to modify an instrument driver
- Exploring the structure of an instrument driver
- Steps to modify an instrument driver

## Day 2

### Creating a New Instrument Driver

Sometimes you have an instrument that does not have an instrument driver. This lesson describes how to create a new instrument driver. Topics include:

- Designing an instrument driver structure
- Developing an instrument driver
- Testing an instrument driver
- Deploying an instrument driver

### Developing an Application

This lesson describes how to develop effective and efficient instrument control applications. You will integrate the lessons learned in this class to develop a real world, automated application. Topics include:

- Exploring and applying common, effective LabVIEW architectures for instrument applications
- Applying best practices in LabVIEW as it relates to instrument control applications.