

LabVIEW I

This course is for LabVIEW beginners and teaches the basis on how program using NI LabVIEW.

Duration: 5 half-days virtual or 3 days on site

Main topics:

- Introduction to LabVIEW, purpose and goals of the course
- How to implement interactive measurement using a data acquisition device (NI DAQ)
 - Connecting the hardware
 - Validate I/O
 - Troubleshoot unexpected I/O results
- How to interface, acquire and analyze data from non-NI instruments
 - Connecting the hardware
 - Validate I/O
 - Troubleshoot unexpected I/O results
- How to explore existing LabVIEW projects
 - Explore a LabVIEW project
 - Parts of a VI
 - Dataflow
 - Example code
- How to create a new simple LabVIEW application
 - Create a new project and VI
 - Explore different data types
 - Build an Acquire-Analyze-Visualize VI (NI DAQ)
 - Build an Acquire-Analyze-Visualize VI (non-NI hardware)
- How to debug and troubleshoot a LabVIEW application
 - Correct a broken VI
 - Debugging techniques
 - Manage and display errors
- How to execute code repeatedly using While Loops and For Loops
 - Use While Loops and For Loops

- Timing a loop
 - Use Loops with Hardware Application Programming Interfaces (APIs)
 - Data Feedback Loops
- How to use and process groups of data
 - Groups of data in LabVIEW
 - Working with single-channel acquisition data
 - Working with multi-channel acquisition data
 - Explore additional array examples
- How to execute code based on a condition
 - Conditional logic introduction
 - Create and configure Case structures
 - Common examples
- How to access and modify file resources in LabVIEW and basic concept of file I/O
 - Write data to text file
 - Write multi-channel data to text file
 - Create file and folder paths
 - Analyze data in a text file
 - Compare file formats
- Modular programming and how to use subVIs to reuse code and improve code readability
 - Understand modularity
 - Create an icon
 - Configure the connector pane
 - Document a subVI
 - Calling a subVI
- How to group data of mixed data types into a cluster
 - When to use clusters
 - Create a cluster
 - Read and write clusters
 - Error clusters

- Using clusters with charts and graphs
- How to automatically propagate data types changes
 - When to use use type definitions?
 - Creating and using a type definition
- Common sequential LabVIEW design techniques and the “state machine” design pattern
 - Explore sequential programming
 - Explore state programming
 - State machines