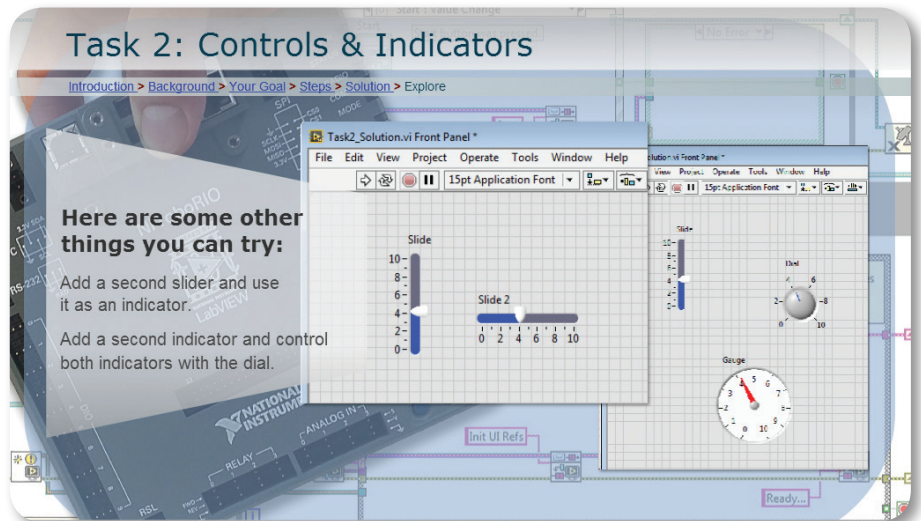# Mechatronics with LabVIEW

A project-based learning curriculum for controls, robotics, mechatronics, and embedded systems using LabVIEW and the NI MyRIO Control

A one year program delivering project-based learning with LabVIEW® and the TETRIX® PRIME build kit

Task 2: Controls & Indicators

Introduction > Background > Your Goal > Steps > Solution > Explore

Here are some other things you can try:

Add a second slider and use it as an indicator.

Add a second indicator and control both indicators with the dial.

Deliver high-quality, standards-based curriculum

This one-year high-school or early-college-level program prepares students to be a Certified LabVIEW Associate Developer. This course includes project based instruction using the core features and functionalities in LabVIEW Development System. With the focus on system design, build and control, this two-semester course teaches the core principles of cyber-physical systems applicable to multidisciplinary engineering fields.

NI Certified LabVIEW Associate Developer (CLAD)

NATIONAL INSTRUMENTS

LabVIEW™

CERTIFIED ASSOCIATE DEVELOPER

The NI Certified LabVIEW Associate Developer is the first step in the three-part NI LabVIEW certification process. It 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. You can use this certification to assess and validate an individual's LabVIEW development skills for the purpose of project staffing or career advancement.


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Dynamic Solutions, Inspired Classrooms

Deliver a pathway to certification in a format that engages digital-native students

Provide an immersive instructional experience with project-based learning

Mechatronics delivers instruction in a format today's digital learners thrive in: blended learning with interactive online delivery, simulations and team-based activities.

Project-based learning

Project-based learning is an essential learning strategy throughout Mechatronics. Authentic activities create a relevant educational experience for students. Students develop communication, teamwork and leadership skills while also learning engineering principles.
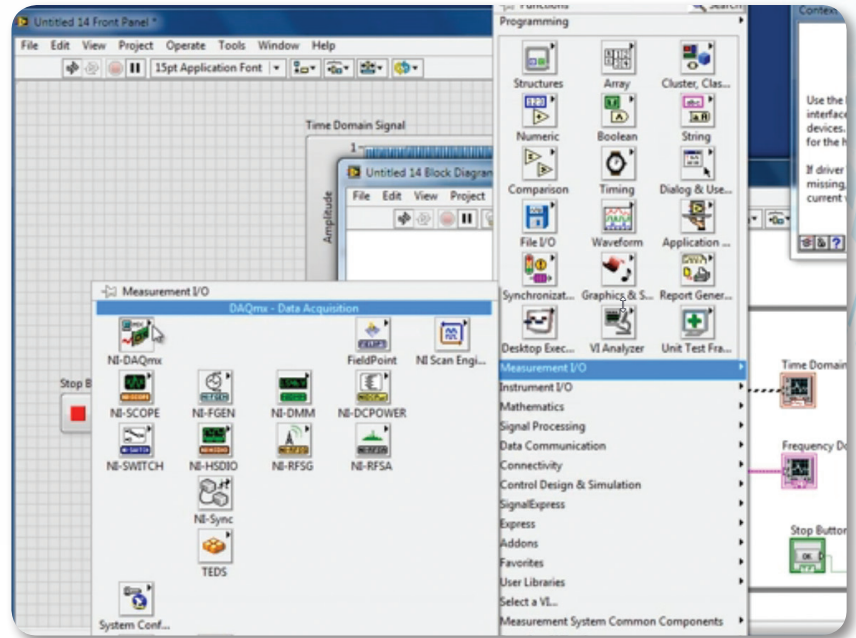
Semester 1: Engineering Controls using LabVIEW

90 hours

A project-based orientation in system design, build and control working with the LabVIEW software controls only. Students demonstrate a broad understanding of LabVIEW core features and functionality, including the ability to read and interpret LabVIEW programs.

90 hour semester consists of content and self study program creation.

Upon completion of Semester 1, students will be prepared to take the Certified LabVIEW Associate Developer certification.

Course Outline:
- Introduction to LabVIEW
- Troubleshooting and Debugging
- Introduction to SubVis
- Developing Module Applications
- Organizing Data
- File I/O
- Variables
- Design Technologies
- Synchronization Technologies
- User Control
- Error Handling + User Interface

NATIONAL INSTRUMENTS
LabVIEW™
CERTIFIED ASSOCIATE DEVELOPER

Semester 2: Systems Design

90 hours

In semester 2, students demonstrate a broad understanding with cyber-physical system design and control. Project-based learning activities teach the core principles of controls, robotics, embedded systems and mechatronics.

Course Outline:
- Intro to myRIO
- Dead reckoning
- Sensors
- Filtering Data
- Wireless controls with dashboard
- P.I.D. control
- Advanced P.I.D.
- Computer vision with myRIO
- Three axis stabilization
- Artificial Intelligence Systems

Ordering Information

High School Packages	
ADV-ENG-HS10	10-Student Pack w/LabVIEW, myRIO, TETRIX PRIME, curriculum
	10-Student pack w/myRIO, TETRIX PRIME, curriculum. No LabVIEW
Post-secondary Packages	
ADV-ENG-PS10	10-Student Pack w/LabVIEW, myRIO, TETRIX PRIME, curriculum
ADV-ENG-PS20	20-Student Pack w/LabVIEW, myRIO, TETRIX PRIME, curriculum
	20-Student Pack w/myRIO, TETRIX PRIME, curriculum. No LabVIEW
Hardware kit	
ADV-ENG-HWKIT	Additional Hardware Package includes myRIO and TETRIX PRIME

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