

Z200

Control Loop Tuning Methods



Learn about identifying processes, choosing controller modes, tuning controllers, and evaluating results of process control tuning.

Course type and methods

This is an instructor led course with interactive classroom discussions and associated lab exercises.

Student Profile

This training is targeted toward technicians responsible for configuring and tuning control loops applied to temperatures, pressures, levels, flows, etc.

Prerequisites

Students should have at least one year of experience working with industrial processes and associated controllers.

Course objectives

Upon completion of this course the participants will be able to:

- Understand nonlinearities associated with instrumentation and actuators
- Determine process modeling parameters including process gain, process time constant, and process dead time
- Select configured control modes (proportional, integral, derivative, etc.) based on process modeling parameters
- Choose, apply, and validate the optimal control tuning parameters for a given process

- Identify need for and tune feed forward control applications
- Configuration and tuning of cascade control loops
- Evaluate the cyclical variation reduction capabilities of a given control loop

Main Topics

- Basic instrumentation and actuators
- Instrumentation and actuator nonlinearities
- Process identification
- Feedback controllers
- Control tuning
- Dead time compensators
- Feed forward compensation
- Cascade control
- Cyclic reduction

Duration

The duration is 5 days

Course Outline

Day 1	Day 2	Day 3	Day 4	Day 5
<ul style="list-style-type: none">• Instrumentation and actuator introduction• Control introduction Control terminology• Lab session #1	<ul style="list-style-type: none">• Process identification• Lab session #2• Feedback controllers• Lab session #3	<ul style="list-style-type: none">• Control tuning• Tank level tuning• Dealing with dead time• Lab session #4	<ul style="list-style-type: none">• Feed forward tuning• Cascade tuning• Lab session #5	<ul style="list-style-type: none">• Cyclic reduction• Lab session #6

To register, contact the North America Customer Service Center or visit us online ABB Inc.
+1 800 HELP 365 Option 2, Option 4
Fax: +1 919 666 1388
abbuniversity@us.abb.com

abb.us/abbuniversity

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