Basic Process Control

SERIES SPECIFICATIONS & COURSE OUTLINE

CONTENTS
Produced in cooperation with ISA – The Instrumentation, Systems and Automation Society (ISA™) – this nine-part instrumentation series is designed to help participants understand the principles and concepts of process control. This series also introduces symbols, diagrams, connections, and basic troubleshooting.

AUDIENCE
The Basic Process Control series is designed for control systems technicians, electricians, mechanics, process operators, and other instrumentation and control professionals. These programs are particularly helpful for technicians preparing for ISA's Certified Control Systems Technician® (CCST®) program.

LEARNER EXPECTATIONS
This series is intended to be used as an essential component in your instrumentation curriculum. Each lesson has specific objectives associated with the information presented. Our experience indicates that those who complete the training are likely to accomplish the stated objectives. Furthermore, if these lessons are built into a total curriculum which includes practice in the working environment, it will help provide participants with the knowledge necessary to master the subject.

Available formats:
- Interactive Online
- Courseware

Call 1-800-828-8190 to arrange a FREE series demo!

www.coastal.com
Basic Process Control

**BPR001 Feedback Control**
This course covers the function of instrument control systems and explains the basic steps in a control process.
- Manual and automatic control
- Variables used in process control
- Components and functions of a feedback control loop
- Common types of control elements

**BPR002 Process Control Modes**
This course is designed to teach workers the function of a controller in a process loop and explain the four modes of control.
- Two-position control
- Proportional control
- Integral control
- Derivative control

**BPR003 Process Characteristics**
Process variables such as pressure, temperature, flow, and level are taught within this course.
- Characteristics of open and closed systems
- Heat, mass, and pressure
- Fahrenheit and Celsius temperature scales
- Rankine and Kelvin temperature scales
- Heat and heat transfer

**BPR004 Process Variables**
This course covers the relationship among force, area, and pressure and the difference between atmospheric, gage, and absolute pressure.
- Converting between gage pressure and absolute pressure
- Pressure measurement and height of liquid
- Converting between psi, inches of water, inches of mercury, volume, density, and specific gravity
- Flow rate, mass flow rate, and volumetric flow rate
- Methods of measuring temperature

**BPR005 Instrumentation Symbols**
Participants should be able to identify different instrumentation symbols after reviewing this course.
- Balloon symbols
- Loop identification numbers and loop indicator suffixes
- Line symbols
- Valve and actuator symbols
- Reading a simple loop

**BPR006 Instrument Loop Diagrams**
The sections on a loop diagram are discussed in this course.
- Instrument ports and connections
- Junction boxes and identifiers
- Operating range and set point for an instrument
- Symbols and reference
- Electronic loops
- Pneumatic loops

**BPR007 Piping Instrumentation Drawings**
Help participants interpret instrument symbols used on instrumentation diagrams as well as identify the types of instrumentation diagrams with this course.
- ISA Standard 5.1
- Control concepts
- Symbols and identifiers

**BPR008 Mechanical Connections**
This course focuses on mechanical components such as gaskets and o-rings and how tubing is applied in instrument systems.
- Tubing materials and applications
- Calculating tubing gain
- Fittings and plastic tubing
- Cleaning, tubing, and fittings for silver soldering

**BPR009 Electrical Connections**
This course covers how to identify different types of wires and differentiate between crimped splice and in-line splices in this course.
- Coaxial cable connections and conductors to terminal
- Grounds and shields
- Electrical noise and signal distortion
- General safety and intrinsic safety
- Signal tracing in an electrical circuit