Develop a Fully Skilled Workforce
Systematic Training Solutions for the Plastics Industry

Interactive CD-ROM edition
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**CourseWorks™**

**Delivery, Management and Tracking Software**

CourseWorks™ is the software application used to deliver our CD-ROM training programs. This easy-to-use program features integrated tracking and database capabilities that simplify the process of collecting, organizing, and reporting training records. Pre-tests and post-tests can be administered to assess an employee’s knowledge level before and after taking a course.

**Track Pro™**

Track Pro allows the facilitator to view the participants’ answers to each individual question, essay and survey responses, and mail messages.

**Customize Pro™**

This feature gives facilitators the ability to insert custom slides and questions using digital pictures, text, and audio files. Sections of the courses that may not agree with your plant’s mode of operations can be easily turned off.

**Networking**

Training programs can be run over a Wide Area Network (WAN) or Local Area Network (LAN) using the CourseWorks™ networking software.

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**CourseWorks™ Software**

**Installation CD-ROM & Manual**

PRODUCT ID: cbt.cw
An Introduction to Injection Molding

The fastest way to get new hires up-to-speed

This course provides participants with a general introduction to the plastics industry. The primary focus of this training program is the day-to-day operations of a typical injection molding facility.

An Introduction to Injection Molding was created for newcomers to the injection molding industry or anyone that would like to learn more about plastics. We recommend that new hires take this course before participating in our Injection Molding Basics series.

Topics covered include:

- An overview of plastics and the industry
- A typical molding facility
- General plant safety
- An introduction to the molding process
- Molding machine components
- Material handling
- Injection mold terminology
- Common part defects

An Introduction to Injection Molding

1 Interactive Training Program (1-2 hours)

PRODUCT ID: cbt.im.bs.iim
    cbt.im.bs.iim.uk (EU & UK version)
Injection Molding Basics

Here’s how you can get all your employees on the same page

These courses teach employees the three major aspects of injection molding; the Machine, the Process, and the Mold. *Injection Molding Basics* gives new hires a good idea how injection molding works. These programs also serve as excellent refreshers for any employee; from operators and technicians to management and setup personnel.

**Program 1 | Machine**
- Cites important safety precautions for working around injection molding machines
- Gives an introduction to the injection molding process
- Introduces machine types and the different modes of operation
- Discusses the components of the injection molding machine and their respective functions
- General procedures for starting up and shutting down a molding machine

**Program 2 | Process**
- Discusses polymers and the three criteria used to classify them
- Covers some of the more common procedures for material preparation
- Introduces the three phases of the molding process; injection, cooling and ejection
- Explains the need for maintaining an accurate process log
- Defines common injection molded part defects and explains their causes

**Program 3 | Mold**
- Explains the specific functions that an injection mold must perform
- Introduces the various machining methods used to construct a mold
- Discusses the three mold configurations commonly used in the industry
- Covers common runner shapes and gate types
- Gives an overview of proper mold maintenance

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**Injection Molding Basics**
3 Interactive Training Programs (3-6 hours)

PRODUCT ID:  
cbt.im.bs.imb  (EU & UK version)  
cbt.im.bs.imb.uk  (Spanish Version)  
cbt.im.bs.imb.mcl  (Mandarin Version)
RJG’S DECOUPLED MOLDING℠

Developed in collaboration with RJG’s corporate headquarters in Traverse City, Michigan, this four course series starts with the major components of the molding process, and progresses to systematic troubleshooting. The DECOUPLED MOLDING℠ system is an ideal processing method intended for anyone interested in optimizing an injection molding process.

Program 1 | Introduction to DECOUPLED MOLDING℠
- Discusses polymerization, crystallinity, additives, regrind and material degradation
- Lists necessary components of a proper part design
- Describes the injection molding process in depth
- Covers molding machine components and their functions

Program 2 | DECOUPLED MOLDING℠ Techniques
- Compares traditional and DECOUPLED MOLDING℠
- Defines the three DECOUPLED MOLDING℠ techniques
- Covers transducers and proper transducer placement
- Introduces signal conditioners and display devices

Program 3 | Reading & Interpreting Data
- Provides participants with an understanding of graphs & scaling
- Explains how to identify different types of graphical curves
- Introduces the integrals used in DECOUPLED MOLDING℠
- Compares ideal and inconsistent pressure curves

Program 4 | Systematic Troubleshooting
- Discusses the importance of proper process documentation
- Explains the appearance and symptoms of defects
- Introduces logical steps involved in troubleshooting defects
- Describes common processing defects, their causes and actions to correct them

DECOUPLED MOLDING℠
4 Interactive Training Programs (4-6 hours)

PRODUCT ID: cbt.im.as.dm
RJG’s eDART™
This course was created for production personnel that monitor and optimize injection molding processes equipped with RJG’s eDART™ process controllers.

This course will greatly benefit setup personnel, process engineers, machine operators, and managers that use (or plan on using) an RJG eDART™ system.

Participants will be better prepared to establish the following:

- Improved processing methods
- Increased operation efficiency
- Machine and process analysis
- Automated quality control
- Improved process stability
Process Control Systems

It is crucial for processing personnel to understand both open-loop and closed-loop process control.

This training program details process control systems and is designed to help molders make more educated choices. Process Control Systems is a must for any facility which employs (or plans to employ) closed loop process control.

- Open loop vs. closed loop process control
- How process control reduces variation
- Closed loop controllers
- Proper use of process control

Understanding Processing Parameters

Teach your employees the critical parameters that affect processing.

This two-part course details injection molding processing parameters. Understanding Processing Parameters discusses individual parameters to help molders maintain more control of their processes. Participants will learn about processing parameters as they relate to the various phases of the injection molding process.

- Description of molding parameters
- Procedures for optimizing several different molding parameters
- The importance of machine calibration
- Considerations for injection, packing, cooling and part removal
Understanding Plastics

Your employees need to know how and why plastic materials are different

This program emphasizes material handling, processing, explains regrind and the effects of moisture on molded part properties. Different types of plastics and processing considerations are explained.

Topics include:

- The definition of plastics
- Polymer classification
- Material properties affected by processing
- Proper material handling techniques
- Processing characteristics of virgin and regrind

Understanding Plastics

1 Interactive Training Program (1-2 hours)

PRODUCT ID:  cbt.im.ps.up
Troubleshooting Defects

Teach your employees how to reduce scrap and improve part quality

Troubleshooting Defects is packed with information about problems encountered during the injection molding process. This course will help all members of your production team identify, isolate and eliminate the root cause of molded part problems.

- Terminology and descriptions of molding defects
- Systematic corrective troubleshooting procedures
- Process documentation to ease the troubleshooting process
- Long-term and short-term effects of process changes

Injection Mold Setup

Learn safe and efficient die-setting with this comprehensive program

This two part program covers the die-setting process from start to finish with an emphasis on safety. Proper procedures for mold inspection, preparation and installation are outlined.

Injection Mold Setup also covers setup procedures for hydraulic, toggle and hydro-mechanical clamp systems.

- Proper mold installation procedures
- Important safety considerations
- Proper water line set-up
- Safety precautions for mold setup

Routsis Training

tel: (978) 957-0700    fax: (978) 957-1860    www.traininteractive.com
Establishing an Injection Molding Process

Ensure your employees know how to quickly establish a stable and efficient injection molding process

Important safety issues associated with process set-up are stressed throughout the course. This program will also help molders reduce set-up and cycle times.

- Material preparation, drying and mixing
- Screw and barrel cleaning
- Guidelines for setting each processing parameter
- Procedures for proper injection velocity profile set-up
- Proper clamp and part removal settings

Processing For Profit

Learn techniques to increase profitability while maintaining part quality

This course focuses on the relationship between the material, the mold and the molding machine.

Also included is practical, up-to-date information about process documentation procedures - as well as some great tips on process optimization.

- Material handling and preparation
- Process documentation and its importance
- Process optimization
- Energy conservation
Electric Injection Molding

Our two Electric Injection Molding courses will provide participants with a better understanding of the benefits and capabilities of modern all-electric injection molding machines. Safety concerns particular to electric molding machines are also covered.

These programs identify critical differences between hydraulic and all-electric molding machines – and teach participants how to optimize a given process running on an electric molding machine so that they can take advantage of those differences.

Understanding Electric Injection Molding Machines

- General Injection Molding Safety
- Electric Molding Machine Safety
- Machine Guarding
- Comparing Hydraulic and Electric Machines
- Basic Molding Machine Functions
- Efficiency, Accuracy and Repeatability
- Alternative Machine Designs
- Typical Uses for Electric Molding Machines

Processing with Electric Injection Molding Machines

- Closed-Loop Process Controls
- Hydraulic vs. Electric Machine Controls
- Process Optimization Strategies:
  - 1st Stage Filling
  - 1st Stage to 2nd Stage Transfer
  - 2nd Stage Pack
  - Screw Delay
  - Screw Recovery
  - Screw Decompression
  - Cooling Time
  - Mold Opening
  - Part Ejection
  - Mold Closing
  - Clamping

**Electric Injection Molding**

*2 Interactive Training Programs (2-3 hours)*

PRODUCT ID: cbt.im.ps.eim
The Effects of Shrinkage, Warpage & Part Ejection

Understand three of the most complicated aspects of injection molding

This course is designed to familiarize production personnel with complications that may arise during processing concerning shrinkage, warpage and ejection.

- How packing affects shrinkage and warpage
- Ejection systems for simple and complex geometry
- The effects of part geometry
- Amorphous vs. semi-crystalline polymer behavior

The Effects of Mold Filling, Gating & Weld Lines

What every technician needs to know about mold filling

This course outlines mold filling and how different gating configurations affect filling. Also discussed are weld and meld lines and their effects on molded parts.

- Weld line occurrence and strength determination
- Gate types, location, and importance
- Fatigue and cyclic stress
- Tooling considerations

The Effects of Mold Filling, Gating & Weld Lines

1 Interactive Training Program (1-2 hours)

PRODUCT ID: cbt.im.ps.es

PRODUCT ID: cbt.im.ps.em

INJECTION MOLDING
Injection Mold Maintenance

*Your employees should understand proper procedures for safety and mold care – before, during, and after a production run*

From mold storage to part removal, this course provides participants with good mold maintenance habits and aims to extend tool life & increase productivity – while stressing important safety considerations.

- Proper mold maintenance
- Mold storage and preparation
- Water line maintenance
- Techniques for extending tool life

Injection Molding Machine Maintenance

*Learn the standard maintenance considerations for an injection molding machine*

Designed to introduce the many maintenance considerations for an injection molding machine. Participants are also shown newer technologies; such as laser leveling, ultrasonic tie bar stretch measuring, and portable machine process monitors.

- Basic machine maintenance & safety concerns
- Fluid and platen maintenance
- Screw and barrel maintenance
- Preventative maintenance & logging
Injection Molding Hydraulics

A must for any company utilizing hydraulically-powered injection molding machines

This course demonstrates the importance of hydraulics in the injection molding process. Machine operators will learn ways to reduce wear on hydraulic components, while more advanced employees concentrate on hydraulic print reading and theory.

- Basic hydraulic theory
- The role of hydraulics in injection molding
- The function and purpose of hydraulic components
- Recognition of hydraulic symbols
- Directional valves and flow controls
- Hydraulic pumps and motors
- Proportional valves and servo valves
- Hydraulic fluid management

INJECTION MOLDING

Understanding 3-Phase Power

Understanding 3Ø Power covers power generation, transformation and distribution, and is designed for training all maintenance personnel that use 3Ø power applications. Proper understanding of 3Ø power will help employees balance power loads, improve power factors, and make more efficient decisions about usage and management.

- Power generation and distribution inside the plant
- WYE and Delta power systems
- The need for balanced circuits
- An introduction to Motor Control Centers (MCC)
- AC to DC power conversions
- Power Factor calculations and corrections

MAINTENANCE
Meredith Springfield Blowmolding

This series consists of five programs geared toward production personnel involved in blow molding operations: Designed to improve the quality of blow molded products while increasing process efficiency and production yields. Produced by Meredith Springfield and A. Routsis Associates, Inc.

Program 1 | Introduction to Extrusion Blow Molding
- An overview of the extrusion blow molding process
- Discover the four essentials of blow molding
- The basics of how plastic pellets are converted into parisons
- How the clamp section and blowing stations form hollow parts
- An overview of blow molding machine support equipment

Program 2 | Continuous Extrusion Blow Molding Machine
- A review of the extruder and machine clamping station
- Explains the importance and function of the screw
- The temperature controls found on the machine
- How the blow molding machine functions during its sequences
- An introduction to specific blow molding terminology

Program 3 | Blow Molding Resin Control
- How to efficiently use resin in a blow molding operation
- Working with polyethylene, polypropylene, and PVC
- Methods of handling regrind
- Discussion of negative resin variance
- A review of the closed loop concept of resin control

Program 4 | Understanding Blow Molded Container Quality
- Establishes the importance of standardized quality requirements
- Reviews downstream operations such as decorating and filling
- How container specifications are developed; from conception to finished product

Program 5 | Working with the Calibration Station
- A review of the machine’s calibration station
- How to set critical neck dimensions
- Forming and maintaining the T, E, S, H, & I dimensions
- Demonstrations on the proper adjustment of calibration station components
Rauwendaal Extrusion Series

These extrusion programs are designed for extruder operators, process engineers, and technical service personnel. This series was developed by internationally reknown expert and author Dr. Chris Rauwendaal.

Program 1 | Extrusion Machinery
- Presents basic extrusion terminology
- Covers extrusion machinery and main extruder components

Program 2 | Instrumentation and Control
- Covers instrumentation and control
- Describes types of extrusion lines and common control methods

Program 3 | Plastics and Plastic Properties Important in Extrusion
- Covers the main types of plastics used in extrusion
- Discusses flow properties and thermal properties

Program 4 | How an Extruder Works
- Describes the inner workings of an extruder
- Explains the functional zones
- Explains the mechanisms at work and illustrates actual behavior of the polymer in the extruder

Program 5 | How to Run an Extruder
- How to get an extruder to run and set proper operating conditions
- How to shut down and clean the extruder
- How to address safety issues

Program 6 | How to Run an Extruder
- How to solve extruder problems
- Prerequisites for efficient troubleshooting
- Step-by-step approach to find the cause of a problem
- Practical solutions for each possible problem

Program 7 | ITX Extrude
The ITX Extrude provides a user-friendly, point-and-click approach to extrusion. The user can input data such as screw diameter, channel depth, helix angle, and melt viscosity. Instant calculations are made to determine important parameters. Data is presented in numerical and graphical form.
Plastic Part Design Series

Our Plastic Part Design Series provides part designers with an understanding of the plastic part design process. This extensive interactive training course also addresses many of the factors and concerns associated with part design. Dr. Robert Malloy, a respected author and professor at the University of Massachusetts, Lowell, developed these comprehensive interactive training programs.

Program 1 | Product Development & the Prototype Process
- Product development steps & concurrent engineering
- Computer simulations for design
- Rapid prototyping and tooling processes

Program 2 | Mechanical Behavior of Polymers
- The mechanical behavior of polymers
- Stress/strain curves and visco-elastic behavior of polymers
- Creep and stress relaxation

Program 3 | Mold Filling, Gating & Weld Lines
- Fatigue and cyclic stress
- Mold filling processes
- Gate types, location, and importance
- Weld line occurrence and strength determination

Program 4 | Shrinkage, Warpage, & Part Ejection
- How packing affects shrinkage and warpage
- The effects of part geometry
- Amorphous vs. semi-crystalline behavior
- Ejection systems for simple and complex geometry

Program 5 | Mechanical Fasteners, Press & Snap Fits
- Assembly techniques
- Snap fit design and considerations
- Design for assembly and disassembly
- Boss and screw design / press fit design and strength equations

Program 6 | Welding & Adhesives Bonding Technology
- Various part welding processes
- Joint design for injection molded parts
- Adhesive bonding applications & techniques
- Wetting, surface attraction and curing of adhesives

Plastic Part Design Series
6 Interactive Training Programs (6-12 hours)

PRODUCT ID: cbt.ds.pd
Mold Design & Moldmaking Series

This comprehensive 9-part course was created with help from many of the world’s leading tool manufacturers and suppliers and is intended for tool designers, mold makers, engineers, part designers, and anyone involved in the tool procurement process.

The Mold Design and Moldmaking Series familiarizes participants with the different types of injection molds, contemporary machining methods, and many of the available mold components.

This course also provides the participant with a tool design methodology and a sample mold specification guide for reference.

Program 1 | Injection Mold Fundamentals
- The four basic functions of an injection mold
- Part design considerations
- Material considerations
- Molding machine considerations
- Initial mold design

Program 2 | Mold Machining Methods, Part 1
- Conventional and CNC milling
- Conventional and CNC lathe
- Conventional and CNC surface grinding
- The advantages and disadvantages to each machining method
- Finishes and stresses with each process

Program 3 | Mold Machining Methods, Part 2
- Conventional and CNC die sinking EDM
- CNC wire EDM
- Polishing
- Inspection equipment
- Seal-offs

Program 4 | 2-Plate, 3-Plate, and Hot Runner Molds
- Explains the three basic mold designs and their construction
- Advantage and disadvantage to each design
- Common uses for each design
- Explains different hot runner systems
- Parting line locks
- Specialty molds
Mold Design & Moldmaking Series

Program 5  |  Mold Bases, Tool Steels & Heat Treating
- Tooling materials and their properties
- Various heat treating methods
- Introduces alternative materials, such as Beryllium-copper
- Features DME standardized mold bases

Program 6  |  External & Internal Actions
- Slides, core pins, & lifters
- Unscrewing & expandable cores
- Inserts
- Dissolvable cores
- Preload and seal-offs

Program 7  |  Part Ejection, Venting & Cooling
- Ejector pins, sleeves, blades and lifters
- Stripper plates and pneumatic ejection
- Water lines, bubblers, baffles and conductive cooling rods
- Multi-stage ejection and ejection return
- Covers different forms of part venting

Program 8  |  Gating Methods
- Commonly used Gates and their characteristics
- Introduction to hot runner gate design
- Introduction to cold runner gate design
- Explains manual and automatic gate removal
- Discusses gate location determination

Program 9  |  Runners, Filling Software & the Mold Design Process
- Parting line determination and considerations
- Core and cavity block configuration
- Cooling line and ejection layout
- Additional mold components
- Mold filling analysis capabilities

Mold Design & Moldmaking Series
9 Interactive Training Programs (9-16 hours)

PRODUCT ID:  cbt.ds.md
Basic Measuring Tools

Ensure that all your employees know how to properly measure your customers’ parts

With these four programs, workers will master the essentials of handling, applying, and reading the most common gauges on today’s shop floors.

Program 1 | Fundamentals and Linear Tools
- Key terms and concepts
- Proper handling and care of gauges
- Criteria for accurate measurements
- Rules; steel, hook, combination squares, basic depth gauges
- Calipers; inside/outside, vernier, dial, electronic

Program 2 | Micrometers and Dial Indicators
- Outside, inside, vernier and electronic micrometers
- Types of dial indicators
- Dial indicating gauges; snap gauges, calipers, depth gauges

Program 3 | Fixed Gauges
- Snap, plug, and ring gauges
- Screw thread plug gauges
- Thread ring gauges

Program 4 | Surface Plate Equipment
- Surface plate equipment
- Gauge blocks
- Height gauges; vernier, dial, electronic
Blueprint Reading

_Your employees should know how to accurately locate and interpret dimensions on engineering drawings_

The six programs in our blueprint reading training course develop workers’ abilities to accurately locate and interpret dimensions on engineering drawings. These training programs are based on ANSI standards and incorporate input from a broad industrial cross-section.

**Program 1 | Introduction to Engineering Drawings**
- The six principal views of a third-angle projection
- Identify the ISO symbols for third-angle and first-angle projections
- Auxiliary views, partial views, and enlarged views
- Determine which line takes precedence over another

**Program 2 | Multiview Drawings**
- Outside, inside, vernier and electronic micrometers
- Types of dial indicators
- Dial indicating gauges; snap gauges, calipers, depth gauges

**Program 3 | Sectional Views**
- Determine which portion of the part is shown in section
- Explain the purpose of section lines and identify the ways they’re used
- Identify and interpret the common drafting conventions applied to sectional views

**Program 4 | Dimensions and Tolerances, Part 1**
- Identify the size and/or location for a given part feature
- Correctly calculate the tolerance specified for a given part feature

**Program 5 | Dimensions and Tolerances, Part 2**
- Locate and interpret dimensions specified by chain, baseline and direct dimensioning methods
- Identify a datum feature and explain its purpose
- Explain how MMC and LMC apply to internal and external features
- Calculate allowance
- Identify a surface finish specification

**Program 6 | Part Feature Specifications**
- Identifies twelve of the most common part features on a drawing
- How to correctly interpret part specifications
Geometric Dimensioning & Tolerancing

These courses are a must for any company manufacturing to GD&T requirements

This four-disc series builds the ability to read and interpret GD&T symbols. Understanding the international engineering language of Geometric Dimensioning & Tolerancing is essential for communicating in the global marketplace.

Program 1 | Basic Principles
- Definition and benefits of GD&T
- Basic Terminologies
- Maximum and Least material condition
- Clearance, interference and transition fits

Program 2 | Interpreting GD&T Symbols
- Diameter symbol
- Coordinate vs. position system tolerance zones
- Effect of material condition on size of geometric tolerance

Program 3 | Form and Orientation Tolerances
- Flatness, straightness, circulatory, and cylindricity
- Orientation tolerances; perpendicularity, angularity, and parallelism
- Application of maximum material condition principle and inspection procedures

Program 4 | Profile, Runout & Location Tolerances
- Profile tolerances
- Runout tolerances; position, concentricity, and symmetry

Geometric Dimensioning & Tolerancing
4 Interactive Training Programs (4-8 hours)

PRODUCT ID: cbt.ts.gdt
SPC Course Group 1: Basic SPC

Process stability begins when people realize some variation is natural in every process. Understanding that producing the highest quality at the lowest cost comes from constantly striving to reduce the variation factor. The three courses in the Basic SPC course group introduce those fundamental SPC skills.

**Program 1 | SPC and Variation**
- SPC versus quality control by inspection
- The differences between attribute and variable data
- Explanations of special and common cause variation
- Detecting variation in manufacturing processes

**Program 2 | Pictures of Numbers – Histograms**
- Building, reading and identifying the parts of histograms
- Reveal patterns of variation through histograms
- Techniques for meeting customer specifications
- Methods for achieving a virtually defect-free process

**Program 3 | Introduction to Control Charts**
- Using control charts to identify causes of process variation
- Understanding the parts of control charts
- Calculating control charts from direct process data
- Rules governing use and interpretation of control charts
SPC Course Group 2: Applying SPC

These courses will help employees develop selection skills and awareness of how control limits are calculated when applying SPC. In Applying SPC, techniques for making control charts, taking corrective action, solving problems, and achieving process stability are introduced.

Program 1 | Selecting Parameters
- Taking a look at your process & preparing to collect data
- Block diagrams, Pareto charts, fishbone diagrams
- Parameter test checklist and monitoring priorities

Program 2 | Types of Control Charts
- Control chart review – benefits, parts, rules
- Variable control charts – X and R chart, X and S chart
- Attribute control charts – P, NP, C, U charts
- Choosing the appropriate control chart for your process

Program 3 | Setting-up and Using a Control Chart
- Rules for constructing control charts
- Calculator tutorial
- Basic statistics
- Step-by-step directions for setting up control charts

Program 4 | Interpretations and Actions
- Control chart patterns and possible causes
- Control charts as an indicator of process problems
- Deciding if and when to adjust a process
- Investigative steps to determine the causes of variation

SPC Course Group 2: Applying SPC
4 Interactive Training Programs (4-6 hours)

PRODUCT ID: cbt.sd.2  
           cbt.sd.2.sp (Spanish Version)
SPC Course Group 3: Process Capability

Process improvement is based on process stability. **Course Group 3** reviews basic SPC concepts and teaches participants how to assess process capability using both variables and attribute data. These courses focus on a commitment to continuous process improvement.

**Program 1 | Selecting Parameters**
- Quality is the key to customer satisfaction
- Continuous process improvement through SPC
- Reducing variation and meeting production goals
- Determine when to take action, and when to leave a process alone
- Manufacturing case studies

**Program 2 | Introduction to Process Capability**
- Definition of process capability
- Using control limits and specification limits to monitor process stability
- Dispersion changes and their effect on control charts and histograms
- Relative capability to determine which process is more capable

**Program 3 | Using Normal Curves**
- Characteristics of a normal distribution
- Estimating standard deviation
- Predicting yield and out-of-specification parts

**Program 4 | Process Capability Assessment**
- Assessing process capability using numerical methods
- Using standard deviation to calculate natural tolerance
- Calculating Cp and Cpk
- Process capability assessments using percent defective and PPM defective
SPC Course Group 4: Design of Experiments

A “process in control” may still not meet a customer’s part specifications. *Design of Experiments* presents methods to help reduce common variation and a series of steps that teams can use to structure designed experiments. These courses are both fun and informative, and provide concrete methods for analyzing and increasing process capability.

**Program 1 | Introduction to DOE**
- Improve processes using carefully planned experiments
- Learn as much about the process as possible while expending minimal time and resources
- Key process definitions and bottom line DOE benefits

**Program 2 | Application of DOE**
- 5-phase approach to DOE: (plan, design, run, analyze, act)
- Fractional factorial experiment to improve popcorn yield
- Manufacturing case study of a process is in control, but inferior to the competition’s

**Program 3 | An Experiment in Tirzah**
- Defending Tirzah, an imaginary 850 BC city
- Verifying stability of Tirzah’s two catapult processes with attribute and variables data
- Assessing the capability of both processes Using DOE to improve catapult process capability

SPC Course Group 4: Design of Experiments
3 Interactive Training Programs (3-5 hours)

PRODUCT ID: cbt.sd.4

Entire SPC/DOE Series

| SPC Course Group 1: Basic SPC | 3 Interactive Training Programs (3-5 hours) |
| SPC Course Group 2: Applying SPC | 4 Interactive Training Programs (4-6 hours) |
| SPC Course Group 3: Process Capability | 4 Interactive Training Programs (4-6 hours) |
| SPC Course Group 4: Design of Experiments | 3 Interactive Training Programs (3-5 hours) |

Entire SPC/DOE Series
14 Interactive Training Programs (14-24 hours)

PRODUCT ID: cbt.sd.all

Routsis Training tel: (978) 957-0700 fax: (978) 957-1860 www.traininteractive.com
Health & Safety Training Programs

Safety and regulatory compliance are hot issues in today's workplace. With watchdog organizations such as OSHA, not even small companies can afford to be without proper training. These courses help keep your employees safe and your company compliant.

- Right-To-Know
cbt.hs.01 | * cbt.hs.01.sp

- Lock-Out/Tag-Out
cbt.hs.02 | * cbt.hs.02.sp

- Bloodborne Pathogens
cbt.hs.03 | * cbt.hs.03.sp

- DOT HM-126F General Awareness
cbt.hs.04

- DOT HM-126F Safety Training
cbt.hs.05

- Safety Attitudes & Actions
cbt.hs.06 | * cbt.hs.06.sp

- Hearing Safety
cbt.hs.07 | * cbt.hs.07.sp

- Basic First Aid
cbt.hs.08 | * cbt.hs.08.sp

- Back Safety
cbt.hs.09 | * cbt.hs.09.sp

- Fire Prevention & Safety
cbt.hs.10

- Personal Protective Equipment
cbt.hs.11 | * cbt.hs.11.sp

- Slips, Trips & Falls
cbt.hs.12 | * cbt.hs.12.sp

- Electrical Safety
cbt.hs.13 | * cbt.hs.13.sp

- Respiratory Safety
cbt.hs.14 | * cbt.hs.14.sp

- Hand, Wrist & Finger Safety
cbt.hs.15 | * cbt.hs.15.sp

- Forklift Safety
cbt.hs.16 | * cbt.hs.16.sp

- Safety Showers & Eye Washes
cbt.hs.17 | * cbt.hs.17.sp

- Eye Safety
cbt.hs.18

- Driving Safety
cbt.hs.19 | * cbt.hs.19.sp

- Fall Protection
cbt.hs.20 | * cbt.hs.20.sp

- Office Ergonomics
cbt.hs.21 | * cbt.hs.21.sp

- Industrial Ergonomics
cbt.hs.22 | * cbt.hs.22.sp

- VDT (Video Display Terminal) Safety
cbt.hs.23

- Materials Handling Safety
cbt.hs.24 | * cbt.hs.24.sp

- Hand & Power Tool Safety
cbt.hs.25 | * cbt.hs.25.sp

- Office Safety
cbt.hs.26

- Ladder Safety
cbt.hs.27 | * cbt.hs.27.sp

- ANSI MSDS (Material Safety Data Sheet)
cbt.hs.28 | * cbt.hs.28.sp

- Preventing Workplace Violence
cbt.hs.29

- Handling Compressed Gas Cylinders
cbt.hs.30
Health & Safety Training Programs

Welding Safety
cbt.hs.31 | * cbt.hs.31.sp

Heat Stress
cbt.hs.32

Safety Housekeeping & Accident Prevention
cbt.hs.33

Workplace Stress
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Fitness and Wellness
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Winter Safety
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Confined Space Entry
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cbt.hs.40

Emergency Response
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Asbestos Awareness
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Guarding Against Tuberculosis
cbt.hs.43

Computer Workstation Safety
cbt.hs.44

Machine Guard Safety
cbt.hs.45 | * cbt.hs.45.sp

Conducting Safety Audits
cbt.hs.46

Crane Safety
cbt.hs.47 | * cbt.hs.47.sp

Dealing With Hazardous Spills
cbt.hs.48

Hazardous Materials Labels
cbt.hs.49 | * cbt.hs.49.sp

Rigging Safety
cbt.hs.50 | * cbt.hs.50.sp

OSHA Recordkeeping for Employees
cbt.hs.51

OSHA Recordkeeping for Managers
cbt.hs.52

OSHA Laboratory Standard
cbt.hs.53

OSHA Lead Standards
cbt.hs.54

Supported Scaffolding Safety
cbt.hs.55

Suspended Scaffolding Safety
cbt.hs.56

Preventing Sexual Harassment 1-3
(for employees, managers and investigation)
cbt.hs.57
cbt.hs.58
cbt.hs.59

* also available in Spanish

59 Health & Safety titles
Each Interactive Course (1-2 hours)