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Training, Seminars & Workshops

Bringing Workforce Training to **YOU!**

By outsourcing your training requirements to **Pueblo Corporate College**, you take advantage of a host of resources that provide....

- ▶ Customized Training Services
- ▶ Over 100 available courses in technical, business, and leadership topics
- ▶ Hands-On activities and state-of-the-art training equipment that augments the courses
- ▶ Complete training packages that include curriculum, materials, evaluations, and more at a fraction of the cost of sending employees to outside training or developing in-house training
- ▶ Flexible delivery options that allow training at your site or in our state-of-the-art Advanced Technology Center
- ▶ Highly qualified staff with in-the-field experience and certifications in applicable areas of study

BISnet

All of the partners listed in this brochure are members of a consortium called the Business and Industry Services Network (BISnet) that is comprised of community and technical colleges in Colorado. This group is the largest provider of workforce development in the state. You value innovative, customer-oriented, responsive training and educational services, and the community and technical colleges showcased here are your strategic partners to provide that and more for you, your employees, and your company.



A Letter from the Director

Finding and retaining good employees are reported to be two of the biggest challenges faced today by businesses large and small. Compounding this challenge is the future impact of mass retirements, referred to as the Silver Tsunami. According to the U.S. Census Bureau, more than 20% of American workers are projected to be age 65 and older by the year 2030.

Retention data suggests that employees target and remain faithful to companies that are committed to their personal and professional development. We understand the importance of training and retraining your workforce.

We know that every organization is different, and we believe it is important to be able to deliver training that is flexible. With this model, we have common learning outcomes to start from on a variety of subjects, and can adjust the training as needed for a better employee and company result. We really don't deliver the exact same class in the same way twice!

One of the most distinct attributes of our department is our unique delivery methods – a classroom without walls or on wheels. Not only can we provide training on-site at your facility in a training or conference room, we also have a fleet of 7 Mobile Learning Labs that can be transported to your location and ready to train in about an hour.

In addition to the over 3,000 students who have been trained in the Mobile Learning Labs, we also have trained an additional 3,000 students on-site at an employer's facility. This capability allows our instructors to take students out of the classroom on to the shop floor to apply learning immediately. These labs are equipped with state-of-the-art technology and are serviced by educators who are *the* best in their class. Targeting employer needs, we customize training and address the demands of business and industry. Our unique delivery methods fill the gaps that are indeed interfering with U.S. global competitiveness.

Thank you for your interest in customized workforce training solutions available through Pueblo Corporate College. Our commitment to training is a strong value of our staff and institution. We look forward to working with you!

Sincerely,

A handwritten signature in black ink that reads "Amanda Corum".

Amanda Corum
Executive Director
Pueblo Corporate College

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Customizing Classes

All of our classes can be customized to meet your specific needs. If there are topics that need more emphasis than others in the course, accommodations can be made. Our instructors can also utilize your drawings, parts or process data to enhance the educational experience for your employees.

Class Scheduling

The courses listed can be delivered to meet your company's schedule. Courses can usually be scheduled within 3 – 4 weeks of your confirmation, depending on the instructor's current schedule. If the training is delivered at your site, we ask that you provide a suitable training room. Another available on-site delivery option is through one of our mobile learning labs. These facilities require a level, paved area, such as a parking, lot for effective setup and operation. We would appreciate your recommendations for proper attire for our instructor and if he or she must stay overnight, the name of a local hotel. Travel expenses may apply.

Class Size

A class size of 8-15 with similar or complimentary job skills is optimum, however, depending on the topic, we can accommodate groups as large as 30 or as small as 6.

Cluster Classes for the Small Employer

Don't let the fact that you have only a few employees that need training stop you. There are many employers out there just like you. Let us know what courses you are interested in and we will contact other small employers who want the same courses for their employees. We can then provide the same kind of training to you along with additional employers to meet our minimum class size.

Icons

In order to make our catalog more user friendly, we have utilized some icons that should provide you with useful information for each class and make your navigation of our catalog a little easier.



On Site – This course can be taught at your site or ours.



Hands On – This course contains hands on learning.



Mobile Learning Lab – This course can be taught at your site in one of our Mobile Learning Labs.

Mobile Learning Labs



We have found that by augmenting lecture and theory with hands on practice (blended learning), participants retain more of the material presented.

To enhance the On Site  and Hands On  capabilities of our courses, we have implemented the fully self-contained Mobile Learning Labs (MLL) . The MLL's will provide a state of the art mobile facility to deliver our training courses in the Electrical Systems, Manufacturing Systems, Mechanical Systems, and Welding arenas. The MLL's provide a complete classroom and lab environment delivered to your location with on-board power, all the comforts of full HVAC, and internet. The MLL's provide classroom capabilities such as student computers and instructor multi-media presentation facilities with accommodation for up to 6 students at a time.

Electrical Systems MLL facilities:

- PLC, Motors and Controls, and Instrumentation trainers
- Electrical systems maintenance facilities
- Troubleshooting with instructor inserted faults
- 9 student computer stations
- Instructor computer station with multi-media projection capability

Manufacturing Systems MLL facilities:

- Haas Toolroom CNC Lathe
- Haas Toolroom CNC Mill
- 2 - CNC simulators
- Manufacturing fundamentals
- Layout, setup, production, and inspection facilities
- 6 student computer stations – with full suites of CAD/CAM software
- Instructor computer station with multi-media projection capability

Mechanical Systems MLL facilities:

- Hydraulic and Pneumatic systems trainers
- Mechanical systems maintenance facilities
- Troubleshooting with instructor inserted faults
- 3 student computer stations
- Instructor computer station with multi-media projection capability

Welding MLL facilities:

- 6 welding stations for stick (GMAW), MIG (Metal Inert Gas), TIG (Tungsten Inert Gas), FCAW (Flux Cored Arc Welding), and Oxy-Acetylene

Grants

Colorado First Incentive Program - Designed for companies who are relocating to or are undergoing a major expansion in Colorado. The Colorado Office of Economic Development works with local economic development organizations to identify eligible companies. Grants are usually funded based on the number and quality of jobs created and whether companies meet the program criteria. Community and technical colleges administer these grants.

Colorado First Competitive Grants - Companies adding new, permanent, full-time jobs to their workforce may apply for Colorado First funds by creating a training plan and application with their local community college or technical college.

Existing Industry - Existing Industry Grants are designed to support Colorado companies who are facing technological challenges to their competitiveness and need to retrain their workforce in order to retain competitive jobs in Colorado. The application process is the same as for the competitive Colorado First Grants.

 **Amanda Corum**
Director of Operations
Pueblo Community College
 (719) 549-3163
 Toll free (866) 478-3256

AutoDesk Civil 3D 2013

This course is designed for the professional who utilizes this state-of-the-art application software and is looking for outstanding drafting, mapping, and analysis efficiency as well as productivity. AutoDesk Civil 3D incorporates all the features of Map 3D and Land Development Desktop. This course emphasizes the use of points, point groups, 2D geometry, alignments, profiles, cross sections, parcels surfaces, contours, spot shots and labels.

Objective

This course is designed to provide the attendee with the fundamentals associated with AutoDesk Civil 3D 2007. After completing this course, the participants will have a better understanding of the areas that this software can positively impact in their operations and efficiency.

Who Should Attend

This course is designed to benefit the entry level civil engineer or technician seeking a better understanding of this powerful application software. This course is also useful for the person needing an update refresher on the features of this release.

Course Content

- Components and interface of Civil 3D
- Point identification and utilization
- Land geometry, distances and bearings
- 3D surface modeling
- Profiles and Sections
- Site grading and design
- Piping for storm sewers and drainage
- Surveying

Course length: 3 days

CEU credits: 2.4

Fee: \$849



Mathematics for Construction

Mathematics for Construction presents mathematical concepts as they apply to realistic construction-related examples and actual construction applications. The concepts progress from simple to those with relatively complex solutions. Many of the problems require participants to work with illustrations, such as those found on the construction job site, in trade and building code books, and on architectural drawings.

Objective

The objective of this course is to provide participants with a simple approach to solving mathematical problems found on architectural drawings and within building codes and to apply the solutions to their job function.

Who Should Attend

This course is designed to benefit entry-level carpenters, masonry and concrete workers, plumbers, roofers, drywall installers and electricians.

Course Content

- Basic math
- Shapes & operations
- Concrete
- Concrete blocks
- Board feet
- Base material & asphalt
- Tanks
- Cones
- Land measurement
- Contractor's instruments
- Yardage
- Cubic inches in a motor
- Speed
- Elevations and contours
- Construction terms

Course length: 1 day

CEU credits: 0.8

Fee: \$329



Print Reading for Construction

This course will introduce participants to reading and interpreting blueprints for residential, commercial, and industrial construction. In addition, a general overview of the construction standards used in each area will be discussed.

Objective

Upon completion, this course will provide the fundamentals that are critical for an individual, in a construction environment, to have when interfacing with foremen, contractors and, in some cases, architects.

Who Should Attend

This course is designed to benefit entry-level carpenters, masonry and concrete workers, plumbers, roofers, drywall installers, and electricians.

Course Content

- Introducing & working with drawing prints
- Basics of working drawings
- Symbols & abbreviations
- Floor plans
- Elevation views
- Sectional views
- Detail views
- Trade information
- Construction materials
- Plans
- Specifications
- Plans - store & apartment
- Light frame construction
- Frame plans
- Civil Drawings

Course length: 1 day

CEU credits: 0.8

Fee: \$329



AutoCAD 2012

Productivity – it is mission critical for an industry that creates, consumes or manages design information. A new standard in CAD productivity began with AutoCAD 2004 software release and has been growing exponentially. AutoCAD's new features, the ribbon menu and more user friendly designed applications make this software easy to use today but many students still feel the need for assistance in navigating the program.

Objective

This course is designed to provide the attendee with the fundamentals associated with AutoCAD 2012. After completing this course, the participants will have a better understanding of the areas that this software can positively impact in their operations and efficiency.

Who Should Attend

This course is designed to benefit the entry level drafters, machinists, architects, engineers, designers, technicians and other staff who need to improve their skills and familiarity with this powerful design software. This course is also useful for the person needing an update refresher on the features of this release.

Course Content

- Drawing commands
- Modifying commands
- Layers, colors, linetypes & other property features
- Annotation including text & dimensioning
- Block creation & insertion
- Inquiry tools
- Plotting
- Paper space vs. model space

Course length: 4 days

CEU credits: 3.2

Fee: \$1109



AC Systems

This course is designed to provide advanced background information to facilitate isolating and correcting problems with industrial electrical distribution, controls, and AC power conditioning systems. This course builds upon the introduction level course but that course is not required as long as participants have a basic understanding of industrial AC systems.

Objective

The objective of this course is to provide a somewhat experienced industrial electrical worker with a more in-depth understanding of the troubleshooting and maintenance of AC distribution, control, maintenance, and conditioning systems.

Who Should Attend

This course is designed to benefit individuals who have a background in or experience with industrial AC systems. It is also recommended for those interested in industrial AC systems.

Course Content

- History of electrical AC systems – knob and tube to today's NEC requirements
- Power management and pricing
- Transfer switches
- Surge protection
- Metering
- Current Transformers (CT's)
- Switchboards
- Busways
- Circuit breaker operation and maintenance

Course length: 3 days

CEU credits: 2.4 Fee: \$849



AC/DC - Industrial Electricity

This course covers the basics of AC and DC electricity through the study of basic AC current with emphasis on resistors, inductors, capacitors, transformers, electrical quantities, and units of measure. Industrial-grade training equipment is utilized to augment the hands-on portion of the course.

Objective

This course will teach the concepts behind Ohm's law, and Kirchoff's voltage and current laws. Other areas include power factors and power factor corrections as well as OSHA safety lockout/tagout procedures. DC current will be covered to gain an understanding of the benefits of both AC and DC systems.

Who Should Attend

This course is designed to benefit maintenance technicians, systems technicians, engineers, supervisors in maintenance or any staff involved with the support of electrical systems.

Course Content

- Electrical safety, arc flash, and lockout/tagout
- Electrical components and measuring instruments
- Ohm's Law - voltage, current and resistance in electric circuits
- Resistors, capacitors, and inductors
- Relays and solenoids
- Diodes, SCR's and rectification
- Protective devices – fuses and circuit breakers
- Wires and NEC Requirements
- Series/Parallel circuits
- Ladder logic
- Transformers
- Industrial electrical symbols

Course length: 3 days

CEU credits: 2.4

Fee: \$849



Calibration

This course is designed to provide advanced background information to increase the understanding of Instrumentation-the monitoring and controlling of processes. This course provides advanced experience with the calibration of sensors and transducers – both 'dumb' and 'smart'. This course builds upon the introduction level Sensors and Transducers course but that course is not required as long as participants have a basic understanding of industrial Instrumentation systems. Industrial training equipment will be utilized to augment the hands-on portion of the course.

Objective

This course is designed to teach advanced principles of industrial instruments calibration and provides a technician advanced level information. This course will provide the participant with the skills to gain a more in depth understanding of instrumentation calibration, calibration terminology, calibration equipment, and calibration technique.

Who Should Attend

This course is designed to benefit maintenance technicians, systems technicians, engineers, and supervisors in maintenance or any staff that want to increase their understanding and skill in calibrating instrumentation systems. This course builds upon the introduction level Sensors and Transducers course but that course is not required as long as participants have a basic understanding of industrial instrumentation systems.

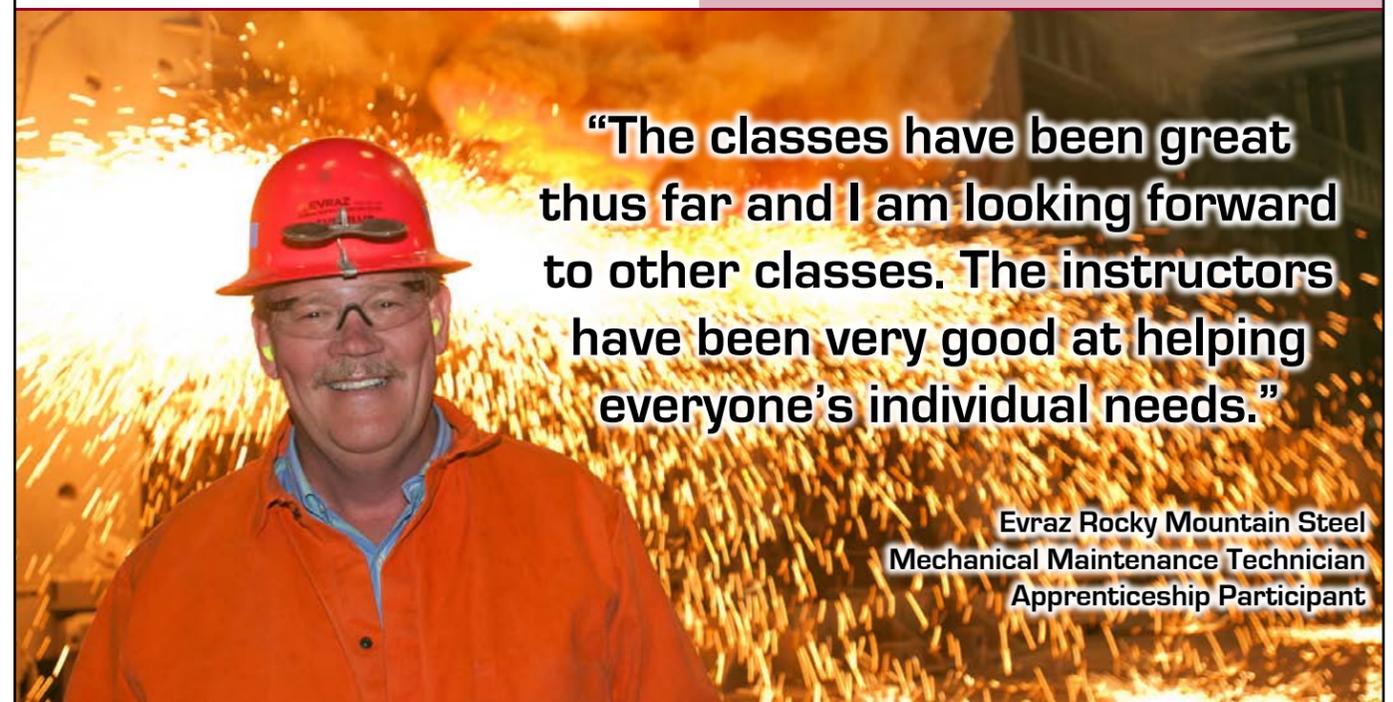
Course Content

- Overview of temperature, pressure, and weight calibration
- 4-20mA current and calibration of 'dumb' transmitters – 'zero' and 'span'
- Calibration of 'smart' transmitters using a Fluke calibrator and a HART Communicator
- Hands on exercises to calibrate 'dumb' and 'smart' temperature transmitters using RTD's and thermocouples
- Hands on exercise with a calibrated paddlewheel flow sensor
- Calibration of 'smart' and 'dumb' ultrasonic level sensors
- Calibration of differential pressure transmitter

Course length: 3 days

CEU credits: 2.4

Fee: \$849



“The classes have been great thus far and I am looking forward to other classes. The instructors have been very good at helping everyone's individual needs.”

**Evraz Rocky Mountain Steel
Mechanical Maintenance Technician
Apprenticeship Participant**

Combustion Theory

This course is designed to provide a background in understanding the principles of burning gas (natural gas, propane, and butane) in industrial re-heat furnaces and residential furnaces. The burners and controls needed to achieve stoichiometric (complete) combustion are analyzed. Hands-on labs provide experience in using a digital manometer to determine flue and air distribution flow and pressures and setting gas supply pressures, and a combustion gas analyzer to determine CO₂, H₂O and CO content. Provide an understanding of methods used to increase increasing furnace efficiency.

Objective

The objective of this course is to provide somewhat experienced industrial electrical worker and HVAC workers with a more in-depth understanding of the theory of efficiently burning gas in furnaces – to enhance their installation, set-up and maintenance skill of these systems.

Who Should Attend

This course is designed to benefit individuals who have a background in or experience with industrial re-heating systems and HVAC workers.

Course Content

- Heating with gas basics
- Principles of gas combustion – methane, propane, and butane
 - Stoichiometric combustion
- Gas furnaces – traditional, mid-efficiency and high efficiency
- Gas burners – achieving a blue flame, excess air
- Gas controls and valves
- Gas ignition systems
- Safety and operating controls for furnaces
- Hands on using digital manometers and gas analysis meters on furnaces

Course length: 3 days

CEU credits: 2.4

Fee: \$849



Communication Systems

Communication Systems are the electronic interfaces used by computers, controllers, and instruments to exchange information. There are many layers of technology required to implement communications: human interface, timing and sequencing, data collection, messaging, cabling and connections, etc. All industries use some type of communication system businesses.

Objective

This course is designed to teach the principles of communication systems and provides a technician-level approach to the field of Communications. This course will provide the participant with the skills to gain a more in depth understanding of the theories of data and signal preparation and integrity, basic computer interfaces, controller and instrumentation interfaces, and interconnections (cabling and fiber optics).

Who Should Attend

This course is designed to benefit maintenance technicians, systems technicians, engineers, supervisors in maintenance or any staff involved with the support of communications systems.

Course Content

- PLC communications overview – Ethernet, Data Highway, ControlNet – using RSLinx
- Character and signal encoding
- Data integrity and error correction
- Instrumentation interface (4-20mA loops and fieldbus)
- Serial interfaces (RS-232, USB)
- Ethernet and CAT-5 cabling
- Fiber optic cables and fiber optic termination
- Coax cables
- DeviceNet
- Data highway
- PA systems – Gaitronics phone

Course length: 2 days

CEU credits: 1.6

Fee: \$579



Control Devices

This course is designed to provide advanced background information to increase the understanding of Instrumentation-the monitoring and controlling of processes. This course provides advanced experience with Control Devices, material analysis sensors, measuring motor speed, limit switches, proximity sensors, photo sensors, light curtains, PID controllers, electrohydraulic positioners, and proportional valves. This course builds upon the introduction level Sensors and Transducers course but that course is not required as long as participants have a basic understanding of industrial Instrumentation systems. Industrial training equipment will be utilized to augment the hands-on portion of the course.

Objective

This course is designed to teach advanced principles of industrial instruments and control systems and provides a technician-level approach to the field of Instrumentation. This course will provide the participant with the skills to gain a more in depth understanding of monitoring operations, processes and equipment through instrumentation, develop troubleshooting and calibration skills at the device and system level, gain a increased understanding of PID controllers operation and balancing.

Who Should Attend

This course is designed to benefit maintenance technicians, systems technicians, engineers, and supervisors in maintenance or any staff that want to increase their understanding and skill in using/maintaining instrumentation systems. This course builds upon the introduction level Sensors and Transducers course but that course is not required as long as participants have a basic understanding of industrial Instrumentation systems.

Course Content

- Material analysis sensors
- Data transmission and digital communication
- Encoders, resolvers, and tachometers
- Limit switches and proximity sensors
- Photo sensors and light curtains
- Using and balancing of PID controllers
- Electrohydraulic positioners – REXA and Rotork
- Boilers and boiler controls
- Safety valves

Course length: 3 days

CEU credits: 2.4

Fee: \$849



DC Systems

This course is designed to provide advanced background information to facilitate isolating and correcting problems with industrial DC electrical distribution, DC motor controls, controls, DC Cranes, and DC power conditioning systems. This course builds upon the introduction level course but that course is not required as long as participants have a basic understanding of industrial DC systems.

Objective

The objective of this course is to provide a somewhat experienced industrial electrical worker with a more in-depth understanding of the troubleshooting and maintenance of AC distribution, control, maintenance, and conditioning systems.

Who Should Attend

This course is designed to benefit individuals who have a background in or experience with industrial DC systems. It is also recommended for those interested in industrial DC systems.

Course Content

- DC motors – brush and armature maintenance
- DC cranes – print reading and operation
- DC drives
- DC power systems – 3 phase rectification

Course length: 3 days

CEU credits: 2.4

Fee: \$849



Electrical Print Reading

Objective

This course will introduce students to the basic principles and concepts of electrical print reading; standard electrical symbols, one-line diagrams, wiring diagrams, Piping and Instrumentation Diagrams (P&ID's) and common industrial control circuits. Emphasis is placed on basic print reading techniques from the standpoint of using electrical diagrams together with their specific symbols, components and applications. Your company's prints can be incorporated into the class and used as a learning exercise – giving the employee increased knowledge of your specific processes or tools. Hands-on exercises will be utilized to gain further understanding and to improve troubleshooting skills.

Who Should Attend

This course is designed for the person who is in an industrial or electronics setting that requires a working knowledge in electrical prints and schematics. Electrical technicians, maintenance technicians, millwrights, or electro/mechanical technicians at all levels will benefit from this course.

Course Content

- Symbols – review electrical components, instrumentation, logic, and interconnections
- Pictorial and Wiring diagrams – different ways to present the same data
- One-line diagrams – upper level and block diagrams including power distribution, industrial controls circuits, PLC connections
- Relay/ladder logic diagrams – common method for diagramming used for most industrial controls
- Piping and Instrumentation Diagrams (P&ID's) – diagram methods used to portray most industrial automated processes - showing process measuring instruments, electrical interconnects, process material piping, controllers, and valves and other control devices
- Electrical schematics – reading electronics diagrams

Course length: 2 days

CEU credits: 1.6

Fee: \$579



Electricity for HVAC Workers

This course is designed to provide a background in understanding the basic principles of electrical safety, making electrical measurements, in using test equipment (multimeters, ammeters, digital manometers, and gas analysis meters), reading and understanding HVAC schematics and symbols, and understanding NEC wiring requirements. Hands-on labs provide experience in wiring and troubleshooting control circuits, using a digital manometer (to determine flue and air distribution flow and pressures and setting gas supply pressures), and a combustion gas analyzer to determine CO₂, H₂O and CO content.

Objective

The objective of this course is to provide plumbing and other non-electrical HVAC workers with basic electrical understanding and experience, to be able to perform basic HVAC electrical component troubleshooting and repair – using basic electrical measurement equipment.

Who Should Attend

This course is designed to benefit HVAC workers and/or plumbers who need to update their electrical skills.

Course Content

- Electrical Safety
- Ohm's law and using multimeters to measure Volts, Amps, and Ohms
- NEC wiring
- Electro-magnetism – solenoids, relays, and transformers
- Single Phase Motors and Start Capacitors
- Relay Ladder Logic
 - Symbols and Print Reading
 - Building and Troubleshooting Relay HVAC Control Circuits (Hands-On)
- Heating and Air-conditioning control circuits
- Hands on using digital manometers and gas analysis meters on furnaces

Course length: 3 1/2 days

CEU credits: 2.8

Fee: \$929



Electricity for Mechanical Technicians

This course is designed to provide you with background in understanding the basic principles of electrical safety, making electrical measurements, reading ladder logic schematics, PLC basics, and a basic understanding of motors, relays and transformers. Hands-on labs provide experience in wiring and troubleshooting control circuits, using a digital multimeter to measure Ohms, Volts, and Amps, and writing and loading simple PLC programs.

Objective

The objective of this course is to provide mechanical technicians (Millwrights) and other non-electrical workers with basic electrical understanding and experience. This should enable the mechanical technician to comfortably work with an electrical technician – performing troubleshooting of electromechanical systems as a team.

Who Should Attend

This course is designed to benefit mechanical technicians (Millwrights) and other non-electrical workers who need to update their electrical skills.

Course Content

- Electrical safety
- Ohm's Law
- Multimeters to measure volts, amps, and ohms
- Basic electromagnetism, relays, and transformers
- Electro-magnetism – solenoids, relays, and transformers
- Single Phase, DC, and three phase motors
- Relay Ladder Logic
 - Symbols and Print Reading
 - Building and Troubleshooting Relay HVAC Control Circuits (Hands-On)
- Simple PLC programming and downloads
- Hands on building /troubleshooting of relay logic circuits and PLC programming

Course length: 2 days

CEU credits: 1.6

Fee: \$579



Industrial AC Motors

This course introduces the theory and application of industrial-sized AC motors, their related control systems units of measure and construction. Industrial-grade training equipment will be utilized to augment the hands-on portion of the course. These lessons may apply to improve up-time and efficiencies at your facility.

Objective

This course teaches the practical application of single phase and 3-phase AC electric motors, their maintenance, protection, as well as control devices and motor control circuitry. Other areas explored include control relays, motor starters, and motor protection.

Who Should Attend

This course is designed to benefit maintenance technicians, systems technicians, engineers, supervisors in maintenance or any staff involved with the support of electrical systems.

Course Content

- Principles of magnetism and parts of a motor and generator
- Single phase AC motors
- 3-phase AC motors
- Basic relay and motor starter control circuits
- Understanding and reading nameplate data
- Motor protection & NEC requirements
- Motor types and motor selection
- Motor failures and troubleshooting
- Special AC motors – Wire wound rotor, synchronous motors, reactance motors, steppers and synchros
- AC Variable Frequency Drives (VFD)

Course length: 3 days

CEU credits: 2.4

Fee: \$849



Industrial DC Motors

This is an introduction to the theory and application of industrial DC motors. Their related control systems, construction and units of measure. The construction of DC motors includes series and shunt. The maintenance of DC motor brushes and commutator. The control and maintenance of industrial DC cranes is covered. These lessons can be applied to improve up-time and efficiencies at your facility.

Objective

This course teaches the practical application of DC electric motors, their maintenance and protection, as well as control devices and motor control circuitry.

Who Should Attend

This course is designed to benefit maintenance technicians, systems technicians, engineers, supervisors in maintenance or any staff involved with the support of DC Motors.

Course Content

- Electromagnetism and series and shunt DC motors
- Commutation
- Understanding replacing brushes and troubleshooting brush problems
- Understanding troubleshooting commutators and repairing them
- Understanding and reading DC Nameplate data
- Construction of DC motors, windings, and insulation
- Control and maintenance of industrial DC cranes
- Rectification of AC to DC
- DC motor Variable Frequency Drives (VFD)
- DC motors power, torque, and speed curves
- Brushless DC motors
- Control relays
- Motor starters/Motor protection

Course length: 3 days

CEU credits: 2.4

Fee: \$849



Instrumentation

This course is designed to provide advanced background information to increase the understanding of Instrumentation-the monitoring and controlling of processes. This course provides advanced experience with 4-20mA control loops, HART communication, temperature and pressure calibration, using and balancing PID controllers, and constructing, programming, and balancing a PLC (with a VFD, Temp Transmitter and 3-phase Fan) ladder logic PID controller. This course builds upon the introduction level Sensors and Transducers course but that course is not required as long as participants have a basic understanding of industrial Instrumentation systems. Industrial training equipment will be utilized to augment the hands-on portion of the course.

Objective

This course is designed to teach advanced principles of industrial instruments, control systems and provides a technician-level approach to the field of Instrumentation. This course will provide the participant with the skills to gain a more in-depth understanding of monitoring operations, processes and equipment through instrumentation, develop troubleshooting and calibration skills at the device and system level, and gain an increased understanding of PID controllers operation and balancing.

Who Should Attend

This course is designed to benefit maintenance technicians, systems technicians, engineers, and supervisors in maintenance or any staff that want to increase their understanding and skill in using/maintaining instrumentation systems. This course builds upon the introduction level Sensors and Transducers course but that course is not required as long as participants have a basic understanding of industrial Instrumentation systems.

Course Content

- Process control and PID controllers
- Optical sensors and proximity sensors
- Analyzers and safety devices
- Pressure and temperature calibration - calibration of 'dumb' transmitters – zero and span and calibration of 'smart' transmitters using a communicator
- Principles of level, temperature, pressure, and flow measurement
- Using a HART communicators
- Smart transmitters
- 4-20 ma loops, HART communications
- Wire a PLC, VFD, smart temperature transmitter and write and operate your own ladder logic
- PID controller program

Course length: 3 days

CEU credits: 2.4

Fee: \$849



Introduction to Electrical Troubleshooting

This course is designed to provide a background in understanding the basic principles of electrical safety, making electrical measurements, reading ladder logic schematics, PLC basics, and a basic understanding of motors, relays and transformers. Hands-on labs provide experience in wiring and troubleshooting control circuits, using a digital multimeter to measure Ohms, Volts, and Amps. Writing and loading simple PLC programs.

Objective

The objective of this course is to provide new electrical technicians with exposure to electrical measurements and topics.

Who Should Attend

This course is designed to benefit new electrical technicians with little electrical background and other non-electrical workers who need to update their electrical skills.

Course Content

- Troubleshooting and troubleshooting techniques
- Relay Ladder Logic
 - Symbols and print reading
 - Building and troubleshooting relay HVAC control circuits (Hands-On)
- Hands on labs with relay logic circuits
- Hands on labs with 3-phase motor control circuits understanding simple PLC programming and downloads
- Basics of PLC programming and downloading and running PLC programs

Course length: 2 days

CEU credits: 1.6

Fee: \$579



Medium and High Voltage Circuits

This course is designed to provide advanced background information to increase the understanding of medium and high voltage systems including safety, distribution, wiring, testing and maintenance. This course builds upon the introduction level Industrial AC/DC course but that course is not required as long as participants have a basic understanding of industrial AC systems.

Objective

The objective of this course is to provide a somewhat experienced industrial electrical worker with a more in-depth understanding of the troubleshooting and maintenance of medium and high voltage AC distribution, control, maintenance and conditioning systems.

Who Should Attend

This course is designed to benefit individuals who have a background in or experience with industrial AC systems. It is also recommended for those interested in industrial AC systems.

Course Content

- Definition of medium and high voltage
- Arc flash and OSHA analysis of a substation arc flash incident
- Switch gear and power distribution
- Motor control centers
- Conduit and cable trays
- Power cables and splicing power cables
- Circuit breaker testing and maintenance
- Power transformer maintenance – Doble Testing, DGA Testing

Course length: 3 days

CEU credits: 2.4

Fee: \$849



Motors and Controls - Industrial

This course introduces the theory and application of industrial-sized motors, their related control systems and units of measure. Industrial-grade training equipment will be utilized to augment the hands-on portion of the course. These lessons may be applied to improve up-time and efficiencies at your facility.

Objective

This course teaches the practical application of electric motors, their maintenance and protection, as well as control devices and motor control circuitry. Other areas explored include control relays, motor starters, and single-phase motors.

Who Should Attend

This course is designed to benefit maintenance technicians, systems technicians, engineers, supervisors in maintenance or any staff involved with the support of electrical systems.

Course Content

- Principles of magnetism and parts of a motor and generator
- Single phase AC motors
- DC Motors
- 3-phase AC motors
- Basic relay and motor starter control circuits
- Understanding and reading Nameplate data
- Motor Protection & NEC Requirements
- Motor types and motor selection
- Motor failures and troubleshooting
- AC and DC Variable Frequency Drives (VFD)

Course length: 3 days

CEU credits: 2.4

Fee: \$849



National Electrical Code – 2011 NEC Changes

The Economic and Workforce Development Division certifies that the participant meets the requirements to receive Professional Development Units (PDU's) in compliance with the Continuing Competency Program outlined by the State Electrical Board of Division Registrations of the Colorado Department of Regulatory Agencies. The PDU's are considered applicable to consumer protection and meet the core competencies of the designated topic as identified by the State Electrical Board.

Objective

Analyze the major electrical code changes in the 2011 National Electrical Code and how these changes affect today's electricians and electrical contractors.

Who Should Attend

Electricians that want to earn Professional Development Units (PDU's) toward renewing their State of Colorado Electricians License.

Course Content

Examine Article 230 and Article 250 of the 2011 NEC. Determine different load calculations and size conductors for grounding and bonding at services and at the load.

- General requirements
- Wiring and protection
- Grounding versus bonding
- Wiring methods and materials
- Equipment for general use
- Special occupancies
- Special equipment
- Special conditions
- Communications systems

Course length: 1 day

CEU credits: 0.8

Fee: \$329



National Electrical Code (NEC) - Electrical Theory and Calculations

The Economic and Workforce Development Division certifies that the participant meets the requirements to receive Professional Development Units (PDU's) in compliance with the Continuing Competency Program outlined by the State Electrical Board of Division Registrations of the Colorado Department of Regulatory Agencies. The PDU's are considered applicable to consumer protection and meet the core competencies of the designated topic as identified by the State Electrical Board.

Objective

Understand electrical theory and demonstrate the practical application of electrical calculations utilized in the electrical field including residential, industrial and commercial load calculations.

Who Should Attend

Electricians that want to earn Professional Development Units (PDU's) toward renewing their State of Colorado Electrician's License.

Course Content

Using Article 210 through Article 310 plus Article 430 of the 2011 National Electrical Code to gain a full understanding of electrical theory and how to size conductors correctly.

- Mathematical concepts review
 - Review basic fractions, decimals and rounding of numbers
- Ohm's law
 - Determine power, current, voltage and resistance using Ohm's Law
- Articles 210 through 310
 - Examine each article and find important information on proper number of circuits, box conductors and for proper size of services
- Article 430
 - Identify the difference between nameplate and NEC tables and how to use the NEC tables to make critical calculations

Course length: 1 day

CEU credits: 0.8

Fee: \$329



National Electrical Code (NEC) - Grounding and Bonding

The Economic and Workforce Development Division certifies that the participant meets the requirements to receive Professional Development Units (PDU's) in compliance with the Continuing Competency Program outlined by the State Electrical Board of Division Registrations of the Colorado Department of Regulatory Agencies. The PDU's are considered applicable to consumer protection and meet the core competencies of the designated topic as identified by the State Electrical Board.

Objective

Explore the Grounding and Bonding sections of the 2011 National Electrical Code and demonstrate various electrical calculations.

Who Should Attend

Electricians that want to earn Professional Development Units (PDU's) toward renewing their State of Colorado Electrician's License.

Course Content

Examine Article 230 and Article 250 of the 2011 NEC. Determine different load calculations and size conductors for grounding and bonding at services and at the load.

- Article 230
 - General information
 - Overhead service conductors
 - Underground service conductors
 - Services for over 600V, nominal
- Article 250
 - General requirements
 - System grounding
 - Enclosure, raceway bonding
 - Grounding electrode system and grounding electrical conductors
 - Methods of equipment grounding

Course length: 1 day

CEU credits: 0.8

Fee: \$329



National Electrical Code (NEC) - Introduction

This course is designed as an introduction to understanding and applying the National Electrical Code (NEC). Participants will study the hierarchy of regulatory agencies that govern, co-exist and supplement the requirements of the NEC; as well as become familiar with specific sections of the manual that regulate wiring, circuit protection and motor protection and control.

Objective

The objective of this course is to provide an introduction to the requirements of the NEC and how these requirements apply to electricians, electrical maintenance and other industrial electrical workers in the performance of their jobs.

Who Should Attend

This course is designed to benefit individuals who have little or no working experience with using the NEC or use of the NEC manual.

Course Content

- NEC definitions and terminology
- Conductor ampacities and wire sizes and standard color
- Properly size and specify overcurrent protections
- Requirements for grounding & bonding
- Sizing and installing branch circuits
- Types of electrical enclosures
- Types of flexible cords and their uses
- Sizing motor and motor controller circuits, motor disconnects, motor short circuit protection and motor overload protection
- Cable sizes to use, the number of conductors and the de-rating of cabling under certain conditions.
- Types of Raceways (including conduit), when to use them and the installation requirements

Course length: 3 days

CEU credits: 2.4

Fee: \$849



National Electrical Code (NEC) - Wiring Methods

The Economic and Workforce Development Division certifies that the participant meets the requirements to receive Professional Development Units (PDU's) in compliance with the Continuing Competency Program outlined by the State Electrical Board of Division Registrations of the Colorado Department of Regulatory Agencies. The PDU's are considered applicable to consumer protection and meet the core competencies of the designated topic as identified by the State Electrical Board.

Objective

Investigate the different wiring methods identified in the 2011 National Electrical Code and demonstrate use of wiring tables listed in NEC text.

Who Should Attend

Electricians that want to earn Professional Development Units (PDU's) toward renewing their State of Colorado Electrician's License.

Course Content

Examine the Articles 300 through 392 in the 2011 NC including all conduits, wire ways, cables and Romex.

- Conduit fill
- Conduit ampacity
- Wire ampacity
- Chapter 9 Tables 1-11A
- Annex C Tables
- Requirements of 600V and above

Course length: 1 day

CEU credits: 0.8

Fee: \$329



Programmable Logic Controllers (PLC's) - Advanced

This course is designed to provide the fastest and most effective procedure for isolating and correcting problems with Allen-Bradley and Siemens PLC systems using RSLogix, RSLinx and Direct Soft software. This course builds upon the introduction level course but that course is not required as long as participants have a basic understanding of PLC systems. This course is taught in a hands-on environment. Even though the course utilizes Allen-Bradley products, this course covers topics that are universal to the use of PLC's in the field.

Objective

The objective of this course is to provide workers experienced with Programmable Logic Controllers (PLC's) with a more in-depth understanding of the troubleshooting and programming of these systems. This course also provides an introduction to monitoring PLC's for faults and current status, including Ethernet, PanelView HMI, Producer and Consumer tags that control the system.

Who Should Attend

This course is designed to benefit individuals who have a basic background in or experience with programmable logic controller systems. It is also recommended for those interested in programmable logic controller systems.

Course Content

- Industrial prints to identify field to PLC connectivity
- Using RSLinx software to Monitor Data and perform DDE/OPC data transfers
- Identify and clear major and minor faults using RSLogix5000 and LC front panel lights
- Electrical noise & grounding
- Wire and program clamp and drill and garage door interface
- Ethernet networking and fiber optic Ethernet
- Setting and retrieving status bits
- Producer/Consumer tags
- Distributed IO (over Ethernet)
- Using RSLogix5000 to make on-line edits
- Using RSLogix5000 to force input and output, and create trends to monitor a project
- Wire and program a PLC ladder logic PID controller
- Program a PanelView HMI interface using FactoryTalk View Studio
- Analog inputs and outputs (4-20mA & +/- 10V)

Course length: 3 days

CEU credits: 2.4

Fee: \$849



Programmable Logic Controllers (PLC's) - Introductory/Intermediate

This course is designed as an introduction to programmable logic controller systems. Participants learn what programmable logic controller systems are, how they work, and how they can be used to control various processes and machines. This course is taught in a hands-on environment, featuring the Allen-Bradley ControlLogix and MicroLogix, SLC systems and Siemens Direct Soft software. The course covers topics that are universal to the use of PLC's in the field.

Objective

The objective of this course is to provide an introduction of programmable logic controllers to the person who has little or no experience with these control systems. Participants will gain an understanding of the capabilities for controlling processes, equipment, and other functions in an industrial setting.

Who Should Attend

This course is designed to benefit individuals who have little or no working experience with programmable logic controller systems. It is also recommended for those interested in following up with the intermediate or advanced level courses.

Course Content

- Main components of the PLC systems and their functions
- Navigating through the RSLogix5000 and RSLinx software
- Setting up communications between the PLC and the PC
- Numbering systems
- Setting Ethernet IP network – assigning addresses to PLC's, PC's and PanelViews
- I/O systems, tags, and addressing
- Downloading and uploading programs
- Ladder logic programming basics
- Timing Sequencing using programming timers and programming counters
- Doing math, move, conversion instructions
- Event sequencing using limit switches and proximity switches
- Automating, stopping, stepping techniques used in ladder programming
- Transferring, monitoring, and running projects using RSLogix software
- Trending an operating PLC program.
- Numerous hands-on experiments to gain understanding and experience in all the above topics

Course length: 3 days

CEU credits: 2.4

Fee: \$849



Sensors and Transducers

This course is an introduction to sensor technology used in robotics, automated manufacturing and process control. It is important because sensing and measurement are a critical and failure prone part of all automated systems. This course is designed to be an introduction to and basics of instrumentation and industrial automated process controls. Hands-on activities are emphasized in the testing and integration of sensors in simple control systems and to provide understanding of data transmission and controller terminology.

Objective

This course is designed to provide participants with a solid understanding of the operation of process control sensors and transducers and to measure temperature, pressure, level and flow. Participants will learn automated process control and using and tuning PID controllers using sensors and transducers. Students will be competent in understanding the construction and troubleshooting of closed and open loop control systems.

Who Should Attend

The course is for technicians and managers desiring an introduction to instrumentation sensors and transducers, and closed loop control systems. Prior knowledge of PLC's, automated process and manufacturing environments is recommended but not required.

Course Content

- Understanding of Piping and Instrumentation Diagrams (P&ID), symbols of and reading P&ID drawings
- Temperature measurement theory and temperature measurement devices
- Pressure measurement theory and pressure measurement devices
- Flow measurement theory and flow measurement devices
- Level measurement theory and level measurement devices
- Hands on lab experiments: setting up a water pump to fill a water column and measure level using both pressure and an ultrasonic sensor, measuring and understanding orifice plate and venture flow elements and calibrating thermocouple and RTD temperature transmitters
- Open/closed loop control
- PID controller understanding and terminology
- PID tuning techniques
- 4-20 mA transmission loops
- HART communicator basics

Course length: 4 days

CEU credits: 3.2

Fee: \$1109



Test Equipment

This course is designed to provide skills in understanding the proper use of test equipment for various industrial applications. Focus includes identifying the various types of test equipment, their strengths, limitations, reading and calibration.

Objective

This course will provide participants with the skills to:

- Gain a more in-depth understanding of test equipment
- Develop troubleshooting skills by utilizing the appropriate test equipment
- Gain a familiarity of use by hands-on exercises
- Understanding calibration

Course Content

- Proper selection of test equipment
- Symbols review & schematics
- Accuracy, resolution and calibration
- Digital multi-meters
- Current meters
- Hand held oscilloscopes
- Temperature measurement and recording devices
- Data loggers and chart recorders
- Capacitor testers
- Megohmmeter/hi-pot meters
- Ground and power test meters

Course length: 2 days

CEU credits: 1.6

Fee: \$579



Who Should Attend

This course is designed to benefit maintenance technicians, systems technicians, engineers, supervisors in maintenance or any staff involved with the support of testing various industrial systems.

Understanding Motor Circuitry and Motor Controls

This course is designed to provide advanced background information to facilitate isolating and correction problems with Industrial Motor Controls. This course expands training on motor speed feedback devices, soft starters and soft start techniques, NEC wiring and motor protection requirements, braking techniques, and Variable Frequency Drives (VFD's). This course builds upon the introduction level course but that course is not required as long as participants have a basic understanding of industrial motors and controls.

Objective

The objective of this course is to provide a somewhat experienced industrial electrical worker with a more in-depth understanding of the troubleshooting and maintenance of industrial motor control systems.

Who Should Attend

This course is designed to benefit individuals who have a background in or experience with motor controls. It is also recommended for those interested in motor controls.

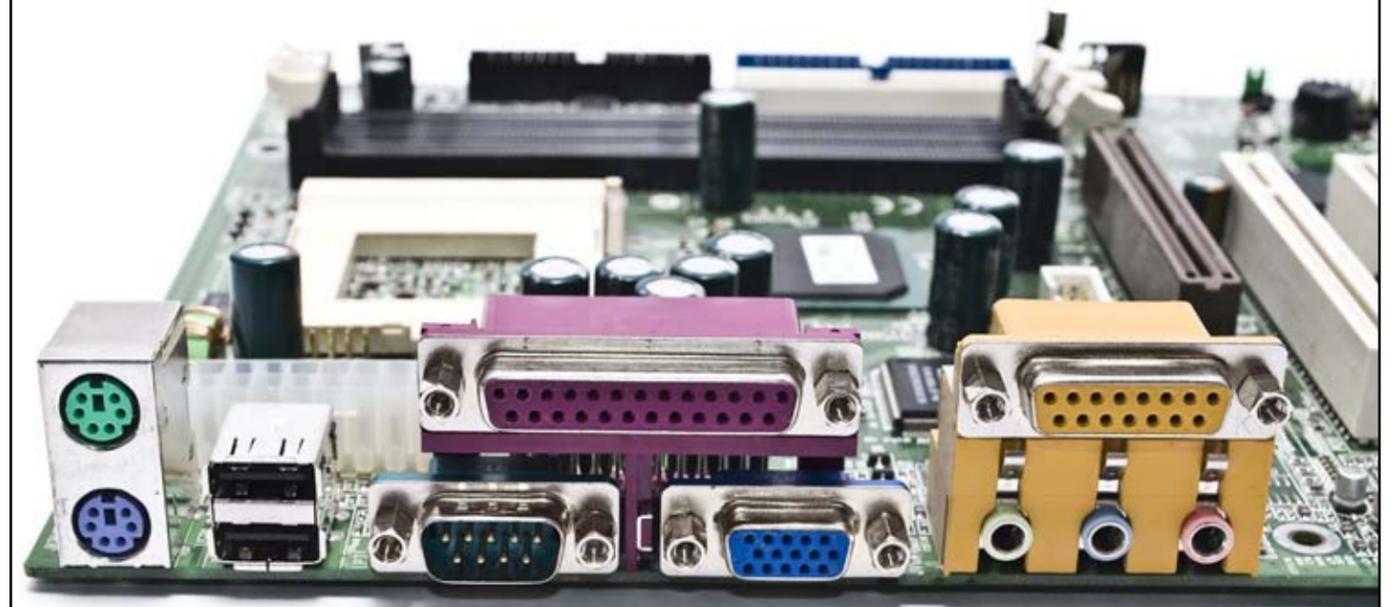
Course Content

- NEC motor circuit wiring and motor protection requirements
- Resolvers, encoders, and tachometers.
- Reduced voltage starting and soft starters
- DC braking, ramp, dynamic and regen braking,
- Controlling and changing motor speed
- Variable Frequency Drives (VFD's)
- Hands-on exercises with VFD's and 3-phase motor control wiring and troubleshooting

Course length: 2 1/2 days

CEU credits: 2.0

Fee: \$689



Applied Decision Making and Problem Solving for CNC Machine Setups

During every CNC setup we are faced with two options: The first option is to get the machine running and producing parts at all costs, making short term fixes. The second option is to focus on the root causes for poor setups, eliminating those causes and make long term fixes. Typically 95% of all lead time is related to non-value added activities in which setups are a major contributor.

Objective

This course addresses CNC set ups as a non-valued activity and systematically explores those set up activities that should be eliminated, simplified, reduced or integrated.

Who Should Attend

This course is intended for the CNC set up person, but is also suited for: manufacturing engineers, value engineers, tool engineers, process engineers, cost reduction engineers, manufacturing supervisors and managers.

Course Content

This three-day course covers both the non-valued activities and the sources of variation in the set up process and how to eliminate, simplify, reduce or integrate those activities.

- Root cause analysis and corrective action
- Importance of a rigid set up
- Importance of proper fixture alignment
- Understanding of clamping forces as a source of variation
- Understanding cutting tools and tool geometry
- Selecting the right tooling for the right machining application
- Understand how a process is running by reading chip formation
- Importance of written SOPs for setting tool offsets and fixture work shift

Course length: 3 days

CEU credits: 2.4

Fee: \$849



Basic Microsoft Excel (2007 & 2010)

Objective

Improve document formatting and provide a better understanding of Microsoft Excel capabilities.

Who Should Attend

This 8-hour class is intended for anyone who works with Excel. Even if you already use it, this course will definitely teach you more.

Course Content

- Navigating within a document using the scroll bar and keyboard
- Working with the Excel interface
- Creating and editing documents using different formats
- Inserting text, showing formatting marks and using word wrap
- Editing text, working with AutoCorrect, undo and redo
- Copying and moving text, using the clipboard
- Page layout, margins and orientation
- Using tabs, page breaks and proofreading tools
- Fonts and themes
- Navigating cells
- Paragraphs, alignments, indents and custom tabs
- Borders and shading and page numbers
- Basic formulas

Course length: 1 day

CEU credits: 0.8

Fee: \$329



Basic Microsoft Outlook (2007 & 2010)

Objective

Improve workplace communication and personal effectiveness through this widely-used computer application.

Who Should Attend

This 4-hour class is intended for anyone who works with Microsoft Outlook. Even if you already use it, this course will definitely teach you more.

Course Content

- Navigation
- Personalizing the reading pane
- Ribbon interface
- Setting email options
- Types of email accounts
- Sending messages, sending to multiple recipients
- Attaching files, using signatures and using spell check
- Responding to and organizing messages
- Creating contacts and managing contact information

- Distribution lists and contact groups
- Creating notes, tasks and journal entries
- Archiving folders
- Calendar sharing, appointments and calendar viewing
- Snapshots
- Meeting cancellations and updates
- To do bar
- Calendar overlays

Course length: ½ day

CEU credits: 0.4

Fee: \$199



Basic Microsoft Word (2007 & 2010)

Objective

The objective of this course is to improve document formatting and increase user knowledge of MS Word capabilities.

Who Should Attend

This 8-hour class is intended for anyone who works with Microsoft Word. Even if you already use it, this course will definitely teach you more.

Course Content

- Navigating within a document using the scroll bar and keyboard
- Working with the Word interface
- Creating and editing documents using different formats
- Inserting text, showing formatting marks and using word wrap
- Editing text, working with AutoCorrect, undo and redo

- Copying and moving text, using the clipboard
- Page layout, margins and orientation
- Using tabs, page breaks and proofreading tools
- Fonts and themes
- Navigating in documents, bookmarks, and hyperlinks
- Paragraphs, alignments, indents, and custom tabs
- Bullets and numbers, borders and shading, and page numbers
- Tables and forms (as time allows)
- Mail merge (as time allows)

Course length: 1 day

CEU credits: 0.8

Fee: \$329



Basics of Lean Manufacturing (MINI LEAN)

In today's competitive manufacturing world, operating LEAN is no longer an option. It's the key to survival. Are you faced with increasingly late orders and angry customers but yet, when you walk through the factory floor, you see everyone busy with products stacked between machines waiting to be processed? If this is a snapshot of your company, consider the benefits of Lean Manufacturing.

Lean Manufacturing is an integrated business approach to driving out non-value-added activities from the customer delivery cycle in your operations. In this half-day seminar, you will get a plain English explanation of the basic tools of Lean Manufacturing, what this progressive approach to production can mean to your organization, and how to sort through the confusion of what really makes an operation Lean. You will learn various techniques as listed within the course content.

Objective

Take this course to gain a clear understanding of the principles that make Lean Manufacturing work, to learn what Lean Manufacturing can mean to your company and your bottom line and how to modify the organization of your workplace to speed the flow of product from customer order to shipment. Learn the tell-tale symptoms of waste – how to spot them, and how to eliminate them.

Who Should Attend

This course is designed to benefit CEO's, manufacturing engineers, process engineers, managers and supervisors, shop floor personnel and others responsible for implementing Lean concepts within your company.

Course Content

- What is "Lean Manufacturing?"
- Eight forms of waste
- Concepts of visual order
- Techniques of balancing lot sizes
- Concept of Push vs. Pull manufacturing
- Kanbans and how they work
- Two live simulations to practice what you have learned

Course length: ½ day

CEU credits: 0.4

Fee: \$199



Computer Skills Training

Today's computers are equipped with more features and capabilities than ever before. Leveraged computers can allow us to work smarter and faster while enabling us to increase effectiveness. Computer training can benefit your organization through enhanced worker productivity.

Objective

This hands-on course is designed to be customized to fit your organizational needs. Training ranges from basic to advanced features. Software and platforms that are used in your organization are the basis of this training program.

Who Should Attend

This course is intended for individuals who have upgraded computer technologies and need to learn differences between features or anyone interested in improving their computer skills.

Course Content

Basic, Intermediate and Advanced training is available in the following programs:

- Computer fundamentals
- Windows
- Word
- Excel
- Access
- PowerPoint
- Outlook
- FrontPage
- Publisher
- Oracle
- Digitalphotography
- Using the Internet

Course length: ½ day – 3 days

CEU credits: 0.4 – 2.4

Fee: \$199 - \$849



Effective Communication

The most important skill for success and achievement in today's business environment is the ability to effectively communicate. Whether written or verbal, effective communication can improve rapport with co-workers, increase confidence, and strengthen relationships with clients. In order to gain superior communication skills it is not only important to recognize the qualities of a good communicator but to also develop excellent listening skills.

Objective

This course will give participants the confidence and skills necessary to successfully communicate verbally and nonverbally as well as develop listening skills.

Who Should Attend

This course is designed to benefit employees who work with directly with internal and external customers, employees who work primarily in teams, supervisors, and any professional who wishes to improve their communication skills.

Course Content

- Communicating with people at different levels in an organization
- Overcoming barriers that prevent successful communication
- Enhancing active listening skills
- Assessing communication styles
- Building collaborative relationships

Course length: ½ day

CEU credits: 0.4

Fee: \$199



How to Organize a Visual Workplace with the “5S” System

The 5S system is based on the concepts of Sort, Set-in-order, Shine, Standardize, and Sustain. The fundamental strengths of a 5S vision include a workplace that is clean, organized and orderly, thus making it safe, efficient and pleasant. Other improvement activities are fewer accidents, improved quality, and workplace control, resulting in reduced waste and reduced costs. Unlike many perceptions of 5S, this system emphasizes “standardize” and “sustain” because it is these two concepts that provide lasting, measurable benefits.

Objective

With the help of this workshop, you will be able to perform an in-depth audit of workplace organization and standardization through the use of a Workplace Scan and then implement the results using 5S concepts.

Who Should Attend

This course is designed to benefit CEO's, manufacturing engineers, process engineers, managers and supervisors, shop floor personnel and others responsible for making your Lean Manufacturing efforts all they can be.

Course Content

- Learn to perform an in-depth audit of workplace organization and standardization using Workplace Scan
- Learning to organize a workplace by applying the concepts of Sort, Set-in-order, and Shine
- Describing the difference in workplace appearance and functionality before and after the 5S process has been applied.

Course length: 2 days

CEU credits: 1.6

Fee: \$849



Implementing a Pull/Kanban Material System

PROVIDED IN PARTNERSHIP WITH CAMT

Tired of too much inventory, quality glitches, long lead times, and last-minute scrambles to meet delivery times? Gain hands-on experience in how to design, test and implement an effective Pull system that streamlines production and speeds you towards a Lean and efficient operation.

Objective

In one highly interactive day, you'll get completely up-to-speed on the principles of a Pull/Kanban material system, and have the rare opportunity to actually practice what you learn in exciting live simulations. This workshop provides attendees with a full range of real-world examples, learn-by-doing exercises, and practical application methods. Put them all together and you're on your way to reduced lead time and inventory; improved quality and service; and higher levels of overall Lean performance.

Who Should Attend

This course is designed to benefit senior executives, operating managers, manufacturing operation supervisors, industrial and manufacturing engineers, and improvement project team leaders.

Course Content

- Understanding how a demand-based production system solves work flow headaches
- Kanban control techniques: Clearing up confusion about when and how to use them
- Understanding how to blend elements of a Pull system with your existing processes - it's not either/or
- Step-by-step guide for transforming a traditional manufacturing process into a continuous-flow
- Lean process

Course length: 1 day

CEU credits: 0.8

Fee: \$329



Integrating Six Sigma with Lean

Integrating Six Sigma with Lean is a tool that businesses and industries use to achieve quality in their products and/or services. In today's competitive markets, industries must monitor and improve processes and services rapidly to meet the needs of existing and potential customers. There is an increasing demand for managers and workers who understand and are able to apply Six Sigma and Lean methods in solving quality problems. If your operations involve short-run, batch or continuous processes, you should consider this course.

Objective

This course will train participants in Six Sigma and Lean techniques to identify critical problem areas, reduce variation, monitor for unusual variation, determine the capability of your process, understand and optimize your process, and determine the reliability of your product.

Who Should Attend

This course is designed to benefit operators and first-line supervisors and is a good refresher training for engineers. Participants should have basic math skills.

Course Content

MODULE 1: Basic Six Sigma with Lean

- Normal and non-normal variation
- Common and assignable causes
- Variable data
- Key quality characteristics
- Constructing histograms
- Calculating mean, range, and standard deviation
- Estimating sigma
- How Six Sigma improves quality and reduces costs
- Process capability

MODULE 2: Six Sigma with Lean for Special Applications

- Control charts
- How averaging affects distribution
- Short-run, batch, and continuous processes
- Special applications control charts
- Decision tree for identifying the most appropriate chart to use
- Control chart interpretation
- Characteristics that demonstrate process control
- Signs of an out-of-control process

MODULE 3: Target Nominal and Standardized Control Charts

- Strengths and weaknesses of the target nominal chart
- Code and plot sample on a target nominal chart
- Chart interpretation
- Strengths and weaknesses of the standardized chart
- Chart interpretation
- Examples of industries using target nominal and standardized control charts

MODULE 4: Individual X and Moving Average Control Charts

- Strengths and weaknesses of the individual X moving range chart
- Plotting sample data on an individual X control chart
- Calculating and plotting a moving range control chart
- Chart interpretation
- Strengths and weaknesses of the moving average/moving range chart
- Calculating and plotting sample data on a moving range chart
- Examples of industries using individual X and moving average control charts

Course length: 2 days

CEU credits: 1.6

Fee: \$579

Tooling U – SPC Overview 210,
Lean Manufacturing Overview 130



Intro to Minitab Course

Minitab 15 is a software package that gives you the statistical tools you need to analyze your data and improve quality. It is the leading software used to implement Six Sigma worldwide. Through the use of two in-class hands on exercises, the student gains skill in basic statistics and using Minitab tools.

Objective

The student will gain skill using Minitab to analyze data, to understand how decisions are made in improving a process, to use the tools that verify that a process can produce product that consistently meets requirements, and to understand the charting techniques that monitor a process to verify that it remains in control.

Who Should Attend

This course is designed to benefit CEO's, manufacturing engineers, process engineers, managers and supervisors, shop floor personnel and others responsible for making your manufacturing process improvement analysis and decisions.

Course Content

- Basic statistics review –variables, central tendency, variability of data, standard deviation, normality of data, degrees of freedom, regression analysis, residuals, hypothesis testing, statistical significance, large sample size versus small sample size
- Two hands-on classroom exercises using actual data from industry to:
 - Explore the basics of Minitab – opening a worksheet and starting a new project.
 - Create worksheets - data types, data calculations, extracting date time info
 - Create basic graphs (histograms, individual data plots, box and whisker plots)
 - Analyze the relationship between two variables – scatter plots
 - Analyzing data – generating descriptive statistics, performing ANOVA, regression analysis (fitted line plots), and understanding residuals
 - Analyzing process stability using control charts – X bar R, ImR, and S charts, establishing upper and lower control limits

- Analyzing process capability (ability of the process to meet spec requirements) – process capability charts, CpK
- The basics of Design of Experiments (DOE) and exploring Minitab's DOE capabilities
- Using Minitab's 'STAT' guide (from HELP)
- Using report pad to create reports
- Customizing Minitab options
- Using session commands

Course length: 24 hours

CEU credits: 2.4

Fee: \$849

Class Size

On site: maximum 15

Off site: minimum 6, maximum 15

A computer with Minitab 15 needs to be available for each student at your facility.



**Tooling U –
Statistics 220**



Kaizen

“Kaizen” is a Japanese word that means to make one’s job easier by taking it apart, studying it and making improvements. The intent is to make people more productive by improving their working environment. The focus is immediate action rather than longer-term improvements. Kaizen is also known as the deliberate application of common sense. Generally, the best knowledge resides with the people who are actually performing the work. They know the problems and, often, the solutions. During a Kaizen event, these people are involved. They make the recommendations on how to improve the process, and they make the physical changes to the process. Because of this involvement, they typically support and continue the process after the event is over.

Objective

The specific objectives are discussed with each company, consistent with the area being worked on. In general, the objectives are:

- Reduce Changeover Times
- Reduce Unplanned Downtime
- Improve On-time Delivery to Downstream Operation
- Improve Quality
- Improve Safety

Who Should Attend

This course is designed to benefit senior executives, operating managers, manufacturing operation supervisors, industrial and manufacturing engineers, and improvement project team leaders.

Course Content

- Introduction to Kaizen concepts & processes
- Eliminating waste
- Process flow analysis
- Spaghetti diagrams
- Process mapping
- Process flow analysis
- Block factory simulation
- Takt & cycle time charts
- Pull systems
- Mistake proofing
- Total Productive Maintenance (TPM)

Course length: 5 days

CEU credits: 4.0

Fee: \$1369



Lean for Job Shop

If you think an operation without backflows, scraps or defects is a pipe dream, thousands of “Lean” Job Shop manufacturers in the country would beg to differ. That’s because they’ve learned, implemented, and perfected the tools of Lean Manufacturing. Lean manufacturing techniques applied in high mix, low volume job shops shorten the time between the customer’s order and shipment – and they’re enjoying improved flexibility, reliability, and profitability in their operations. This seminar provides a concise introduction to the principles of this powerful tool, and includes thought-provoking class discussions and hands-on simulations that are based on a job-shop environment. You’ll learn about the fundamentals of Lean Manufacturing – Visual Controls, Setup Reduction, Batch Size Reduction, and others that will facilitate your successful move from traditional production to the process of job-shop based Lean Manufacturing by applying what is learned in the classroom sessions to the high mix, low volume simulation.

Objective

Take this course to gain a clear understanding of the principles that make Lean Manufacturing work, to learn what Lean Manufacturing can mean to your company and your bottom line, and to learn how to modify the organization of your workplace to speed the flow of product from customer order to shipment. Learn the tell-tale symptoms of waste – how to spot them and how to eliminate them.

Who Should Attend

This course is designed to benefit CEO’s, manufacturing engineers, process engineers, managers and supervisors, shop floor personnel, and others responsible for implementing Lean concepts within your company.

Course Content

- What is Lean Manufacturing
- Eight forms of waste
- Concepts of visual order
- Techniques of balancing lot sizes in a job shop
- Concept of Push vs. Pull manufacturing
- Kanbans and how they work in a Job Shop environment
- Three live simulations to practice what you have learned

Course length: 1 day

CEU credits: 0.8

Fee: \$329



Mathematics for Construction

Mathematics for Construction presents mathematical concepts as they apply to realistic construction-related examples and actual construction applications. The concepts progress from simple to those with relatively complex solutions. Many of the problems require participants to work with illustrations, such as those found on the construction job site, in trade and building code books, and on architectural drawings.

Objective

The objective of this course is to provide participants with a simple approach to solving mathematical problems found on architectural drawings and within building codes and to apply the solutions to their job function.

Who Should Attend

This course is designed to benefit entry-level carpenters, masonry and concrete workers, plumbers, roofers, drywall installers and electricians.

Course Content

- Basic math
- Shapes & operations
- Concrete
- Concrete blocks
- Board feet
- Base material & asphalt
- Tanks
- Cones
- Land measurement
- Contractor’s instruments
- Yardage
- Cubic inches in a motor
- Speed
- Elevations and contours
- Construction terms

Course length: 1 day

CEU credits: 0.8

Fee: \$329



Mathematics for Manufacturing

Skilled machinists and metalworkers must master certain mathematical concepts to be successful. Mathematics for Manufacturing presents mathematical concepts as they apply to realistic industry-related examples and actual industrial applications. The concepts progress from simple to those with relatively complex solutions. Many of the problems require participants to work with illustrations, such as those found in machine trade handbooks and engineering drawings.

Objective

Skilled craftspeople are the backbone of America’s precision manufacturing workforce. The objective of this course is to enable participants to gain an intensive, practical, working knowledge of arithmetic, algebra, geometry, trigonometry, and applications. Practical problem solving will represent the types of problems that metalworkers face in an actual shop situation.

Who Should Attend

This course is designed to benefit anyone working in the metalworking industry at all levels, plus anyone who is looking for a review in mathematics from a practical point-of-view.

Course Content

- Evaluation exercise
- Arithmetic
- Algebra
- Geometry
- Trigonometry

Course length: 2 days

CEU credits: 1.6

Fee: \$579



Mathematics for Technicians

Skilled machinists, metalworkers and technicians must master certain mathematical concepts to be successful. Mathematics for Manufacturing presents mathematical concepts as they apply to realistic industry-related examples and actual industrial applications. The concepts progress from simple to those with relatively complex solutions. Many of the problems require participants to work with illustrations, such as those found in machine trade handbooks and engineering drawings.

Objective

Skilled technicians are the backbone of America's precision manufacturing workforce. The objective of this course is to enable participants to gain an intensive, practical, working knowledge of arithmetic, algebra, geometry, trigonometry, and applications. Practical problem solving will represent the types of problems that metalworkers face in an actual shop situation.

Who Should Attend

This course is designed to benefit anyone working in the metalworking industry at all levels, plus anyone who is looking for a review in mathematics from a practical point-of-view.

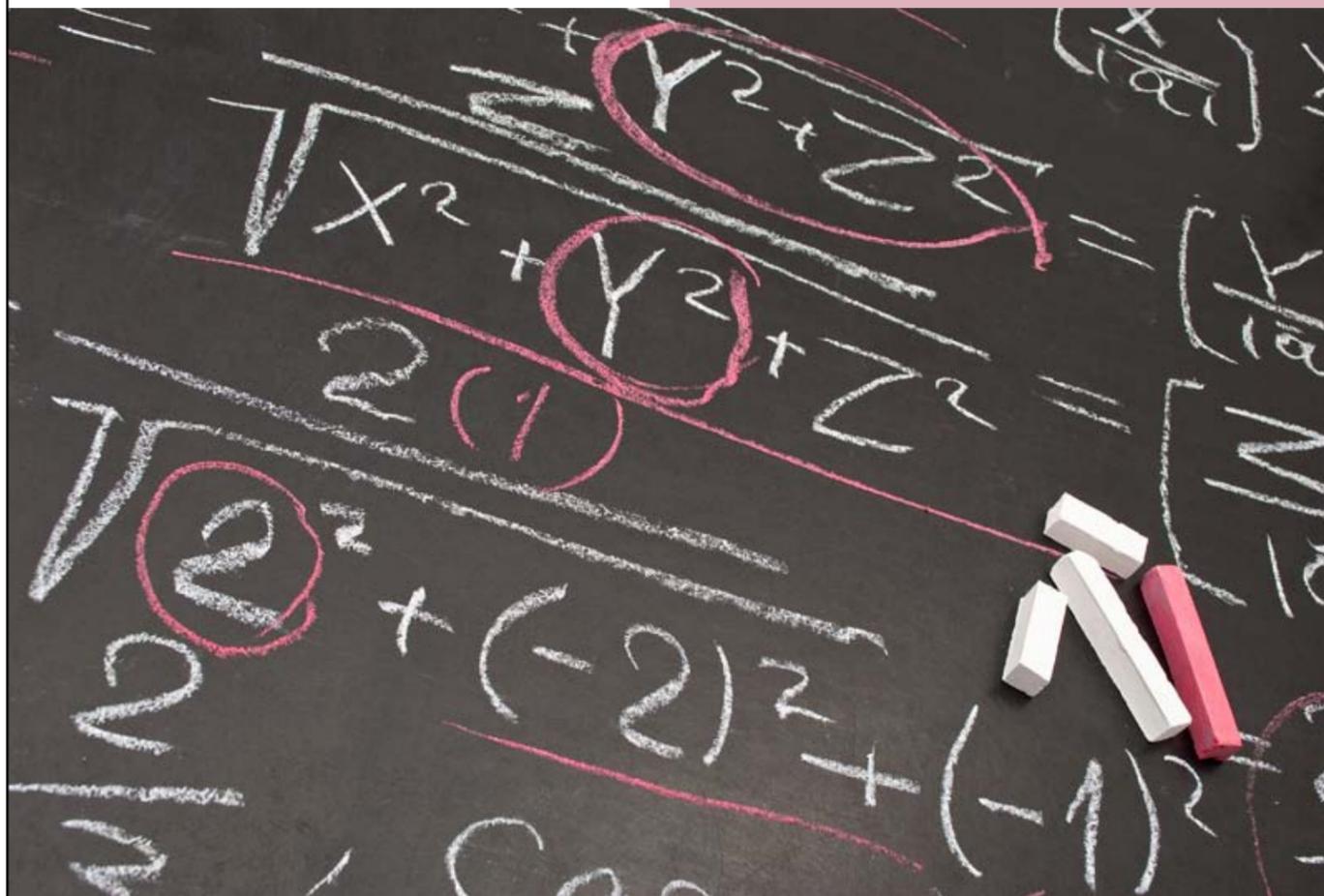
Course Content

- Evaluation exercise
- Arithmetic
- Algebra
- Geometry
- Trigonometry

Course length: 2 days

CEU credits: 1.6

Fee: \$579



Problem-Solving Results: Solutions, Improvements, and Innovations™



achieveglobal®

Objective

Clearly, the ability to generate innovative solutions to workplace problems is more important than ever. But how do you create the energy to implement these solutions in a climate where resources are scarce and people are already overworked? This workshop provides participants with the skills and strategies required to find appropriate problem solutions and the energy to implement them.

Course Content

At the end of the workshop, participants will be able to:

- Explain how the principles and qualities of genuine leadership help create an environment that supports constructive and effective problem solving.
- Describe the six steps in the problem-solving process.
- Describe four types of problem-solving thinking.
- Apply elements of the problem-solving process to a sample situation and actual work-related situations.
- Define problems and/or opportunities in terms of gaps between current situations and expectations.
- Identify strengths that can be leveraged to close the gaps.
- Identify and verify probable causes.
- Generate a variety of innovative solution alternatives.
- Develop effective decision-making criteria.
- Demonstrate the steps for gaining group consensus around a decision.
- Identify the techniques to use in specific situations to support implementation success.

Unit 1: Connecting People and Process (4 hours)

This unit acquaints leaders with a five-step process for defining and analyzing problems, finding solutions, and implementing them. The principles and qualities of genuine leadership are positioned as strategies to create an environment in which people are encouraged to offer their best thinking in line with a clear problem-solving process.

Unit 2: Exploring Gaps, Causes, and Solutions (4 hours)

In this unit, leaders explore a number of tools that can enhance their success in using the problem-solving approach. Tools are sorted into different categories, and participants use a separate toolkit to work with the following methods:

Generating Ideas

- Brainstorming
- Double reversal

Gathering Information

- Check sheet
- Structured surveys

Analyzing Information

- Flowchart
- Fishbone diagram

Making Decisions

- Rating and ranking
- Risk analysis matrix

Planning and Follow-up

- Gantt chart
- Force field analysis

Unit 3: Deciding on a Solution (4 hours)

Problem-solving efforts can easily lose momentum as people struggle with decisions about what to do. In difficult situations, team members can default to voting or accepting the views of the most verbal individuals. This lack of decision buy-in greatly impacts the energy level required to implement solutions and follow-through. In this unit, leaders learn how to define decision-making procedures and use objective criteria to evaluate choices and alternatives.

Unit 4: Making It Happen (4 hours)

Organizations are full of ideas about how to solve problems and exploit opportunities ... ideas that don't always materialize into results. Implementation and follow-through is often given short shrift and, as a result, problem-solving efforts fall short of expectations. In this unit, leaders learn specific strategies to aid in a decision planning and follow through, as well as approaches that build and sustain momentum for those involved.

Course length: 2 days

CEU credits: 1.6

Fee: \$739



Set Up Reduction (2 to 3 days)

PROVIDED IN PARTNERSHIP WITH CAMT

If current set up time is less than an hour this course can be completed in 2 days; If current set up time is over 1 hour, 3 days are required.

The ability to rapidly change from one product to the next is a key to success for many companies. As customer lead times are continually shortened and product mixes become more complex, the ability to change over rapidly and easily can provide a competitive advantage. Fortunately there are powerful, quick-change techniques that can be applied to any type of operation: from metal to wood, from food to plastic, etc.

Set up reduction builds on the principles of the Single Minute Exchange of Dies (SMED) system to dramatically reduce changeover time and production lot sizes, thereby improving flow. The four-step Changeover Improvement Process is used to help companies design no to low cost solutions to reduce changeover time. This allows the business to meet customer demands for high-quality, low-cost products, delivered quickly and without the expense of excess inventory. The systematic process includes analyzing a changeover, then applying quick changeover techniques and strategies to reduce the machine and/or line downtime. Standard procedures will be determined, documented, and used shift-to-shift.

Objective

- Reduction of inventory
- Reduction in lead-time for the product
- Elimination of waste and non-value-added operations
- Improvement of plant capacity
- Increase in manufacturing flexibility
- Improvement in quality as lot sizes and lead-times shrink
- Improvement in cash flow through reduction of inventory and rapid conversion of raw materials into saleable product
- Increase in competitiveness

Who Should Attend

The classroom portion of the event can be attended by up to 20 people. The floorwork team should be limited to 8 people at the most. This group might contain:

- 1-2 Operators from areas being analyzed
- Lead from area being analyzed
- Representatives from operations upstream and downstream from area being analyzed
- Materials Management
- Engineering
- Quality
- Maintenance

Course Content

The schedule consists of classroom sessions and the videotaping of a set up and process changeovers, which are carefully analyzed for potential improvements. An action list will be created to identify tasks and provide a plan to achieve the set up reduction goals. The last day of the workshop will be spent putting ideas into action.

Prior to the training, CAMT will spend time with you discussing issues and determining the areas of focus for the training event.

Following is the series of activities for a set up reduction project. The length of time for the activities is impacted by the length of and the number of operators involved in the set up/changeover.

Day One

- Classroom - Basic theory and explanation of activities (2 hours)
- Collect Data for each operator involved in set up:
 - spaghetti diagram
 - stop watch timer
 - step recorder
 - video taper
 - individuals responsible for set up/changeover work
- Review data, analyze process, identify process steps and times
- Identify external vs. internal activities

Day Two

- Identify process improvements
- Design new set-up process and project performance
- Develop implementation plan

Set Up Reduction (2 to 3 days) continued

Day Three

- Perform and video tape new process, confirm results
- Develop next steps
- Review results and plan with Management

Arrangements

CAMT Responsibilities:

- Trainer
- All training materials and forms
- Flipchart
- Markers
- Certificates of completion

Client Responsibilities:

- List of attendees
- Equipment for recording and viewing video for each operator involved in Set Up
- Stop watch*
- Clipboard*
- LCD projector*
- Three diagrams of areas being analyzed
- Conference room for training time and further discussions
- Refreshments and lunch

*CAMT can provide these items if need be.

Course length: 2 days

Fee: \$799

Minimum attendees: 12

Course length: 3 days

Fee: \$999

Minimum attendees: 12



Team Building

Some common terms that are often used when discussing teamwork are a synergy, a group of people, cooperation, flexibility, and working together but only by combining them do we actually define what a team is: A group of people working toward a common goal. In today's work environment it is vital that employees have excellent communication and listening skills, as well as have the ability to work effectively with others. Often workers are asked to work within a team environment to meet common objectives. This course will help your workforce to prepare to work in effective teams.

Objective

This course provides a proactive approach to help develop skills and strategies instrumental to working in a team environment. This includes learning about team building components, functions, and benefits.

Who Should Attend

This course is designed to benefit workers, supervisors, and managers in all industries who work in a team environment.

Course Content

- Gain a better understanding of team dynamics
- Discover stages of team development
- Learn expectations using the team approach
- Understand leaders and their functions
- Define team member's roles
- Use continuous improvement ideas
- Types of teams

Course length: ½ day

CEU credits: 0.4

Fee: \$199



Technical Writing

Would you like to become successful at technical writing? You'll learn the differences between technical writing and other forms of writing. And, you'll gain insight into the notion of "How it looks is how you look" while brushing up on punctuation, grammar, spelling, and other writing skill mechanics.

Objective

This workshop will show participants the right and wrong way to construct effective documents for both internal and external communications. Areas to be addressed include poorly written memos, letters, emails, requests for capital expenditures, technical reports, and thank-you notes.

Who Should Attend

This course is designed to benefit technicians, systems technicians, engineers, supervisors, administrative assistants, operations managers, and other staff involved with written communications.

Course Content

- Differences between technical and other writing
- Understanding that "How it looks is how you look"
- Elements of good writing
- Understanding that writing is nothing more than thinking well on paper
- Writing process as a quality improvement cycle: plan-do-check-act
- Grammar, punctuation and spelling skills
- Mechanics of writing skills: capitalization, plural words, abbreviations, numbers, units of measure, equations, and symbols
- Writing for your audience
- Importance of peer review and version control
- Memos, letters, emails, requests for capital expenditures, technical reports, and thank-you notes

Course length: 1 ½ days

CEU credits: 1.2

Fee: \$429



"The Pueblo Board of Water Works was very pleased with the specialized training provided by PCC. The corporate training group was very responsive to our needs when developing the individual training classes and worked with us to make sure that the content and presentation of classes met our expectations."

TERRY BROOKS, P.E.
Director of Operations
Board of Water Works of Pueblo, CO

Training Within Industry (TWI)

The Training within Industry (TWI) programs were developed in the United States over sixty years ago and played a major role in boosting industrial production to the levels required to win the Second World War. After the war, they were introduced around the world and, most notably, are still in wide use in Japan today. The Toyota Production System approach of going to the source, observing in detail, and learning by doing was very much influenced TWI and remains as the backbone of Toyota's standardization philosophy to this day. TWI is now being embraced throughout the US by companies to involve their people to sustain the gains from Lean and continuously improve.

Objective

Cornerstone of a Lean Culture

TWI is based on the principle that supervisors have five basic needs to be effective. Two of these needs are Knowledge of the Work and Knowledge of Responsibilities that are unique to each company and/or industry and are therefore provided locally. Supervisors also need Skills in order to perform within their role, regardless of their industry. The following two skills are taught by TWI and are especially important today as Lean pushes more responsibility and decision making down to the supervisor/team leader, and then to the people who do the work.

The 10-hour Sessions are:

- **Job Instruction (JI)** - this course teaches trainers (supervisors and experienced workers) to train inexperienced workers and get them "up to speed" faster. The instructors were taught to break down jobs into closely defined steps, show the procedures while explaining the Key Points and the reasons for the Key Points, then watch the student attempt the process under close coaching, and finally to gradually wean the student from the coaching. The course emphasized the credo, "If the worker hasn't learned, the instructor hasn't taught".
- **Job Methods (JM)** - this course teaches workers to objectively evaluate the efficiency of their jobs and to methodically evaluate and suggest improvements. The course also worked with a job breakdown, but students were taught to analyze each step and determine if there was sufficient reason to continue to do it in that way by asking a

series of pointed questions. If they determined some step could be done better by Eliminating, Combining, Rearranging, or Simplifying, they were to develop and apply the new method by selling it to the "boss" and co-workers, obtaining approval based on Safety, Quality, Quantity, and Cost, standardizing the new method, and giving "credit where credit is due."

- **Job Relations (JR)** - this course teaches supervisors how to build positive employee relations, increase cooperation, and motivation, and effectively resolve conflict. It teaches to deal with workers effectively and fairly and handle problems that arise by gathering and weighing facts before taking action and checking results of action by following up. It emphasized the lesson, "People Must Be Treated As Individuals".

* Prerequisite: Basic LEAN training required.

Who Should Attend

This course is designed for any participant who is required to train employees.

Course length: 10 hours

CEU credits: 1.0

Fee: \$329



Value Stream Improvement for the Front Office

Value stream maps are the blueprints for lean transformation but there is more to a Value Stream Improvement project than value stream mapping. Value Stream Improvement (VSI) projects enable companies to identify the critical process areas needing change and begin the process of continuous improvement. The impact of these projects depends most on preparation before mapping, problem solving to design the future state, project management during implementation, and continuing support and problem solving of the value stream after implementation. This three-day workshop shows you how to define and scope value stream improvement projects, problem-solve to create lean “future state” designs, use lean tools to implement and sustain the future state, and manage implementation of a lean transformation to plan.

- Value Stream Improvement (VSI) Project that addresses the goals and objectives of the business
- CAMT Lean Coach will transfer knowledge of project scoping, value stream mapping and implementation planning skills to everyone responsible for improving a selected business process
- Future state vision and detailed action plan with leadership commitment to support the recommended projects and value stream changes
- 30/60/90 day reviews of the implementation plan with countermeasures that create meaningful, sustained business results

Objective

- Define and scope projects tied to business performance and objectives
- Create future state designs based on analysis, synthesis and advanced lean principles
- Develop implementation plans that have agreement and commitment
- Manage implementation to plan through shared responsibility and continuous problem solving
- Lay the foundation for creating a value stream focus in your organization

Course Content

Preparation

Pre-project Meeting

- Collect value stream performance metrics
- Project selection and scoping
- Complete value proposition
- Workshop preparation

Max of six attendees: deploying exec, lean facilitator, process owners and participants

Day One

Learn how to create a Current State Map

- Define lean and introduce fundamental lean principles
- Practice drawing a value stream map
- Draw current state map of selected process
- Identify problems in the current state map

Day Two

Learn how to create a Future State Map

- Define customer requirements
- Identify appropriate countermeasures to improve flow
- Draw a future state map of selected process
- Develop future state vision and deliver presentation to leadership

Day Three

Develop an Implementation Plan

- Introduce lean perspective on planning
- Develop project goals and action plans
- Select project owners
- Identify meaningful metrics for tracking value stream progress
- Create a visual tracking center for managing VSI projects
- Develop implementation plan and present to leadership

Implementation Plan Follow Up: 30/60/90 day review

- Check performance to plan with project owners
- Identify problems and select countermeasures
- Prepare project and process owners for review to leadership

Arrangements

CAMT Responsibilities:

- CAMT Lean Coach
- All Workbooks, Handouts and Certificates of Completion
- Set up prior to training

Client Responsibilities:

- List of attendees one week prior to training
- Training space
- One table for the projector and trainer laptop computer
- Projector and Projection screen
- Two flip chart easels
- Refreshments and lunch

Course length: 2 ½ days

Fee: \$825

Minimum attendees: 12



Value Stream Mapping

Value Stream Mapping (VSM) is the essential step in Lean implementation. Once you understand the principles of Lean, VSM serves as a tool that helps provide the easily attainable and significant benefits of inventory and lead time reduction. Learn how to master this pencil and paper tool and uncover waste, eliminating its source once and for all. Continue to use VSM throughout the life of your business enterprise to adapt to the continuous changes of resources, customer demand, and general situations. Reduce lead time not only on the shop floor, but also in the front office and with other processes such as product development, from months to weeks or from weeks to days. Realize the additional market penetration that many companies have achieved through the use of this valuable tool and appreciate what many businesses have come to discover — that lead time reduction is an extremely valuable benefit.

Objective

You will learn how to apply the VSM tool to “lift the fog” and “turn on the lights” to expose the waste in your current process; then redesign the process so that waste is eliminated. Your customers will not only be able to “pull” product but pull exactly what they want quickly. Participants will gain a clear picture of which improvement projects will provide the most “bang for the buck.”

Who Should Attend

This course is designed to benefit CEO’s, manufacturing engineers, process engineers, managers and supervisors, shop floor personnel and others responsible for implementing Lean concepts within your company.

Course Content

- Value Stream Mapping — by definition
- Difference between Value-Added and Non-Value-Added activities
- Value Stream and how it adds value efficiently
- Learning to see the Value Stream, its flow and where improvements are most needed
- Learning to make Value Stream “Flow”
- Continuous improvement and striving for perfection
- Kaizen events, what they are, how to define and prioritize them
- Implementing VSM into the entire Supply Chain for maximum results

Course length: 2 days

Fee: \$825

Minimum attendees: 12



Fatigue Management

Objective

Chronic fatigue has been shown to contribute and even cause serious safety and health risks. The good news is that fatigue is a risk factor that everyday lifestyle skills can reduce.

Who Should Attend

This course is designed for participants who have work demands that require them to work long hours, shift work, and rotating schedules. The course is also applicable for any employee who experiences fatigue.

Course Content

- How to Recognize When you are Fatigued
- Sleep Tools for Success
 - Quantity to Sleep
 - Quality of Sleep
 - Circadian Rhythm
- Family/Social Life Tools
- Work Challenges
 - Overtime
 - Shift Work
 - Pressure to Perform
- Health and Wellness Tools

Course Length: ½ hour

Fee: \$45



First Aid/CPR/AED

Prepare your staff with the knowledge and skills necessary to prevent, recognize, and provide basic care for injuries and sudden illnesses until the arrival of emergency medical services personnel. This course covers first aid, adult CPR and AED training. First Aid and CPR training without learning AED skills is also available. Participants who pass a written and hands-on skills exam will receive a completion card from the American Heart Association. Instructors are also BOS Certified to offer First Aid/CPR to health care providers.

Objective

The course is designed to give individuals in the workplace the knowledge and skills necessary to recognize and provide basic care for breathing emergencies, perform cardiopulmonary resuscitation (CPR), and use an automated external defibrillator (AED) for victims of sudden cardiac arrest. This course is developed in conjunction with the American Heart Association and meets OSHA requirements. Participants will receive a certification card for First Aid and CPR. First aid is valid for three years and CPR for two years.

Who Should Attend

This course is for emergency response teams, safety personnel, construction workers, supervisors and employees in the workplace, and other individuals who want or need training to be able to perform CPR techniques and administer emergency First Aid.

Course Content

- The chain of survival
- Heart and lung structure and function
- Heart disease, stroke
- Demonstration and practice of adult one rescuer CPR
- Demonstration and practice of managing an adult choking victim both conscious and unconscious

Course length: 1 day

CEU credits: 0.8

Fee: \$149



Health Promotion Programs

Objective

ROI – “Return on Investment” is always a question when evaluating new programs for the workplace. We can show you how Worksite Wellness programming reduces absenteeism, reduces health care costs, increases job satisfaction and can be used as a recruiting tool.

Who Should Attend

This course is ideal for human resources employees, managers and supervisors.

Course Content

We offer a wide range of Health Promotion topics for your worksite. Such as:

- Health Fairs
- Establishing a Wellness Committee
- HRA “Health Risk Assessment”
- Diabetes Prevention 16-week program
- Smoking cessation
- Healthy meetings and Vending Machines
- Weight loss
- Worksite Fitness Challenges
- Wellness Newsletter
- Establishing wellness policies

Course length: ½ day

CEU credits: 0.4

Fee: \$199



Hospital System Failure Mode and Effects Analysis (Design and Process FMEA)

Provided by ASQ

This two-day FMEA course is designed to provide participants with knowledge and tools to effectively assist in the development of a FMEA as outlined in JCAHO's risk analysis requirement. As a management tool, the FMEA can reduce errors and sentinel events by prioritizing high-risk departments or components in a hospital or medical treatment facility. The course features lecture and interactive workshops to reinforce the concepts.

This course is designed to meet the newest risk management requirements from JCAHO. The lecture and workshop is a hands-on session demonstrating the development of a system Failure Mode and Effects Analysis (FMEA). Participants will learn how a system FMEA is structured to identify which processes need improvement. Software will be used to assist students in organizing and developing a system FMEA.

Objective

- Understand the meaning of the JCAHO standard on risk management
- Develop a process model approach to mapping healthcare delivery
- Define failure points in a process
- Estimate the potential impact of each failure point's effect
- Calculate total impact of potential failure point
- Create action plan to reduce or eliminate failure points according to potential impacts
- Understand the principle of continuous improvement

Who Should Attend

This course is for hospital and medical facility middle and upper management personnel, compliance personnel, physicians, administrators, nurses, clinicians, rehabilitation and other professionals who will be involved in developing an organization's or department's system for using the FMEA technique.

Course Content

- Introduction to system and process FMEA
- Basic background
- Constructing a system FMEA
- Workshop projects
- Develop a process FMEA tool
- Workshop projects

Course length: 2 days

Fee: \$6571 for 6-10 attendees

Minimum attendees: 6

*Travel expense for the ASQ Instructor is additional

Lean Six Sigma for Healthcare Executives

Provided by ASQ

Has your organization attempted to reduce costs but only realized short-term results? Have patient care and ED throughput and capacity constraints become serious issues for your hospital? Using Lean Six Sigma, it is possible to significantly bring and keep costs down and improve patient care, throughput and capacity (including ED, surgery, discharge time of day) by 5 to 15 percent. Lean Six Sigma is an innovative approach to reducing costs and optimizing throughput while maintaining or enhancing quality through the systematic removal of process waste and delays. Using real-life case studies, you'll learn about various cost reduction methods and how staff core competencies and organizational resources affect cost reduction. As a result of this program, you will be able to develop and implement a tailored action plan to quickly reduce your costs and sustain those reductions while improving quality and reducing medical errors.

- Research from other industries and leading healthcare systems that highlights techniques for reducing process waste and converting error reduction and waste into productivity gains.
- The 100-Day Workout method, a rapid-cycle, robust management method for implementing aggressive cost reduction and Lean Six Sigma's DMAIC method.
- "Good to Great in Healthcare" research, a study of more than 200 healthcare organizations updated annually, resulting in analysis of low-cost performers compared to high-cost performers and illustrating practices for quantum improvement.
- A case study that uses comparative data to set stretch goals and project targets for clinical, operations, and supply chain.

Objective

- Seven key concepts of aggressive cost reduction.
- Ten practices for initiating rapid cost position improvement identified in the "Good to Great in Healthcare" research.
- The relationship between medical errors, process waste, waits and delays, and lost productivity and cost recovery.
- The seven types of waste and eight proven techniques to remove waste, optimize throughput and recover associated costs.

- How to formulate three- to five-year strategic process goals for both waste removal and cost recovery (the strategic "Magic Moment" spreadsheet).
- Research from other industries and leading healthcare systems that highlights techniques for reducing process waste and converting error reduction and waste into productivity gains.
- The 100-Day Workout method, a rapid-cycle, robust management method for implementing aggressive cost reduction and Lean Six Sigma's DMAIC method.
- "Good to Great in Healthcare" research, a study of low-cost performers compared to high-cost performers, illustrating practices for quantum improvement.
- A case study that uses comparative data to set stretch goals and project targets for clinical, operations and supply chain.

Who Should Attend

This course was designed for medical directors, CEO's, CFO's, directors of nursing, risk managers and quality assurance directors, and other senior-level executives, including nurse executives, physician leaders, and management teams. In addition to healthcare senior leaders, this program is a "must-attend" for healthcare quality professionals who desire to understand how to coach senior leaders in their roles as key strategists.

Course Content

- Aggressive cost reduction phases
- Set cost and productivity benchmarks
- Translate cost benchmarks
- Deploy disciplined methodology
- Increase organizational capacity for quantum improvement
- Transform belief system toward Lean-Six Sigma

Course length: 2 days

Fee: \$7759

Minimum attendees: 6

*Travel expense for the ASQ Instructor is additional

Medical Response to Weapons of Mass Destruction

Overview

This course is designed to address the medical issues involved in preparing for catastrophic WMD-related medical incidents. It focuses on a systems approach and identifies the types of resources that can assist in the medical response. It addresses a range of issues from preplanning through patient care to handling mass fatalities.

Objective

The overall goal of this training program is to identify basic strategies for the medical response to a WMD event that build upon existing medical doctrine while addressing the unique considerations of the terrorism environment.

Who Should Attend

EMS responders, Incident Commanders, and medical personnel involved in an initial response to a Weapon of Mass Destruction (WMD) event. In addition, any personnel who may be employed in the initial response or First Responders and Public Health can benefit from this course.

Course Content

- Application and integration of National Incident Management System (NIMS), Incident Command System (ICS), and the National Response Plan (NRP) to the medical system
- Specialized medical and rescue resources, including the National Disaster Management System (NDMS), Disaster Medical Assistance Team (DMAT), and Federal Urban Search and Rescue Team (USAR)
- “Mainstays of patient care” at a WMD event
- Clinical effects and symptoms of various types of WMD agents
- Basic Life Support (BLS) and Advanced Life Support (ALS) medical interventions overview for various types of WMDs
- Tactics used to respond to WMD events
- Planning and responding to events involving mass fatalities

Course length: 2 days

CEU credits: 1.6

Fee: \$579



Planning Considerations for Weapons of Mass Destruction Incidents

Overview

This training program is designed to provide a “toolbox” of concepts for plan development. The course curriculum is balanced between theoretical concepts and practical applications of the tools presented, focusing on a product-oriented team approach to the planning process. As students participate in group planning activities, they will be able to apply the information and techniques presented in class to facilitate an enhanced awareness of team dynamics in the planning process.

Objective

The goal of this training program is to provide participants with information, guides, and a process to facilitate development of a WMD incident management plan for their community, incident action planning during an event, and tabletop exercises to help implement the plans.

Who Should Attend

First responders, executive officials, disaster assistance organizations, incident commanders, and hazardous materials personnel. The following can benefit from this course as well: military members, private sector organizations, emergency operations planners, managers and staff, emergency communications officers, and public health technical and management personnel. Local jurisdictions are encouraged to send a team of eight to twelve individuals representing a cross section of departments and agencies to attend as a group.

Course Content

- Terrorism overview
- The planning process
- Local & regional hazard and vulnerability analysis
- Emergency Operations Plan (EOP)
- Functional annexes, hazard specific appendices, and implementing instructions
- Terrorism incident annex within the EOP
- Tabletop exercise development
- Incident action plan (IAP)

Course length: 2 days

CEU credits: 1.6

Fee: \$579



“Pueblo Community College has been very active in the safety community through their involvement with the Pueblo Safety & Health Promotion Council and their OSHA alliance agreement. We have been working with Pueblo Community College for several years and see them as a valuable member of the community and a key partner in raising safety awareness.”

JOHN KONCILJA
Pueblo Safety & Health
Promotions Council

Pre-shift Exercises

Objective

Never underestimate the benefits of stretching before work. Whether your hands are on the keyboard, lifting freight, working machinery or what ever else your job might entail. Stretching will improve your performance and safeguard good health. Through pre-shift exercise programs, many organizations are able to reduce their sprain and strain injury rate by up to 75%.

Who Should Attend

This program is designed for all employees.

Courses Content

- Learn the stretches for the 4 target areas
 - Head & neck
 - Hands & wrists
 - Lower back
 - Shoulders & chest
- Strengthen the core where all movement is initiated and stabilized
- Learn the keys to make stretching a habit, and prevent worksite injuries

Course Length: 2 hours

CEU credits: 0.2

Fee: \$79



Six Sigma Green Belt Training – Healthcare

Provided by ASQ

Green Belts play a vital role within a Six Sigma initiative as they learn to build on the Black Belt's efforts of data collection and analysis, process mapping and design of experiments—many times even leading their own improvement projects. This program has a strong focus on project planning, FMEA, profitability, process mapping, statistical process control, hypothesis testing, and mistake proofing, as well as an overview of the primary Six Sigma tools.

As an ASQ Green Belt you will learn how to use many of the proven Six Sigma problem-solving and statistical tools to contribute to the success of your organization. Green Belt training is a two week session of rigorous and applied training conducted over a two-month period. Are you ready to take the course? The [Green Belt Statistical Self-Assessment](#) can help you determine your statistical skill level.

Each student must bring to the first session a management-approved Green Belt project. For more details on project selection, please contact your ASQ Six Sigma Specialist.

Prerequisites

- Intermediate-level familiarity with laptop computers
- Basic college-level algebra (helpful for statistics applications)
- Management-approved business improvement project that will provide a bottom-line business improvement to the organization by \$5,000 or greater. Project must be brought to the “first” session. For more details on project selection, please contact your ASQ Six Sigma Sales specialist
- Laptop computers are required. Participants must provide own laptop computers with the following minimum requirements:

Hardware

- Processor: Pentium® III or higher processor • Hard Disk Space: 3 GB minimum • Memory (RAM): 128 MB minimum; 256 MB recommended • CD-ROM Drive: 10X or higher • Display with 1024 x 768 pixel or higher resolution

Six Sigma Green Belt Training – Healthcare continued

Software

- Microsoft Windows® 98/2000/NT/ME/XP • Microsoft Office® 98 or higher • Minitab® 15 Statistical Software (required and must be provided by the registrant) • Adobe Reader 5.0 or higher

Course Materials (provided by ASQ)

Investment in the ASQ Six Sigma Green Belt program includes 10 days of classroom training by a skilled and highly experienced Master Black Belt instructor.

Participants receive:

- ASQ's Six Sigma Green Belt Training CD-ROM (contains both weeks of training in Adobe Reader format plus all electronic exercise worksheets and reference material)
- A copy of *Sailing Through Six Sigma* book
- Printed course manuals for both weeks
- Continental Breakfast each day of training
- Lunch on Monday-Thursday.

GREEN BELT PROJECT

Each student must bring to “first” session a management approved green belt project. For more details on project selection, please contact your ASQ Six Sigma Specialist

Course Content

Session – Measure and Analyze

- Six Sigma Overview
- Rolled throughput yield
- Process Mapping
- Failure mode and effects analysis
- Probability
- Introduction to statistics
- Confidence intervals
- Basic tools
- Measurement system analysis (gage R&R)
- Hypothesis testing
- Project planning

Session Two – Improve and control

- Correlation and regression
- Analysis of variance
- Introduction to design of experiments
- Randomized blocks
- Full factorial experiments
- Statistical process control
- Control planning and application
- Mistake proofing
- Project planning

Course length: 8 days

Fee: \$28,854 for 6 – 10 attendees

Minimum attendees: 6

*Travel expense for the ASQ Instructor is additional

Statistical Process Control for Health Care

Statisticians are very familiar with the concepts of measurement and statistical process control (SPC), and have been applying them in industry for years. However, measurement and SPC have not been extensively applied in the health care setting. In today's world of rising health care costs the health care industry is in need of reform. Real health care reform must have quality improvement as its foundation. Comprehensive, systematic quality improvement can only be made using sound methods of measurement and statistical analysis. Develop the foundation for important statistical concepts by analyzing a variety of real world data sets; learn how to match the appropriate statistical tool to your own applications and how to correctly interpret statistical output to quickly reveal problems with a process or to show evidence of an improvement.

Objective

The objective of this course is to provide the attendees with a variety of statistical process control (SPC) tools for various health care applications and to enhance the learning process through direct steps, practical problems, and solutions. This course focuses on how to use SPC for process control

Who Should Attend

Quality managers, quality team leaders/facilitators, consultants, risk managers, any manager or officer who want to enhance their knowledge of SPC methods in the health care setting.

Course Content

- Choosing key processes for improvement
- Understanding variation and its importance
- Preparing to collect data
- Introduction to statistical process control
- Using run and control charts to analyze process variation
- Applying statistical thinking to health care processes
- Developing improvement strategies

Course length: 2 days

CEU credits: 1.6

Fee: \$579

WMD Crime Scene Awareness for First Responders

This course is intended to provide the first responder with the knowledge necessary to conduct response operations while maintaining the integrity of a WMD crime scene. The ability to recognize and preserve evidence is crucial to ensuring a successful prosecution; therefore, it is the responsibility of all first responders to implement procedures to protect potential evidence and minimize disturbing the crime scene in order not to jeopardize a successful prosecution.

Objective

The overall goal of this training program is to demonstrate an understanding of the issues involved in recognizing, protecting, and preserving evidence generated by a Weapon of Mass Destruction (WMD) event for successful prosecution.

Who Should Attend

All response personnel, including: emergency management, emergency medical services, fire service, government administration, hazardous materials, healthcare, law enforcement, public health, public safety, and public works.

Course Content

- Typical WMD (Chemical, Biological, Radiological, Nuclear, and Explosive—CBRNE) agents
- Hazards and risks at a WMD crime scene
- Personal Protection Equipment (PPE)
- Management of a WMD crime scene, including National Incident Management System (NIMS), ICS (Incident Command System), and the National Response Plan (NRP)
- Roles and responsibilities of first responders and the Federal Bureau of Investigation (FBI) at a WMD crime scene
- Recognizing, identifying, and preserving evidence
- Maintaining the integrity of evidence at a WMD crime scene

Course Length: 1 day

CEU credits: 0.8

Fee: \$199



Leadership Development

What makes a great leader? Great leaders have passion for a cause, value and respect others, communicate and listen effectively, possess excellent planning and organization skills, and are creative. All of these skills can be learned and developed because leaders are made not born.

Objective

This course is designed to give individuals in leadership roles the knowledge and skills to practice that are essential aspects of leadership development. Learn how to communicate visions and goals your employees.

Who Should Attend

This course is recommended for supervisors, managers, team leaders, and anyone who has a desire to improve their leadership abilities.

Course Content

- Understanding what leadership is and what effective leaders do
- Developing effective communication and listening skills
- Understanding the difference between a manager and a leader
- Learning values and behaviors that motivate others to achieve goals
- Enhancing people skills
- Improving planning and organizational skills
- Building improved business and meeting skills

Course length: 1 day

CEU credits: 0.8

Fee: \$249

Project Management: Effective Planning, Execution and Control

Provided by ASQ

In this fast-paced, participative course, participants will gain knowledge in how to successfully manage all of their projects and adhere to guidelines outlined in the new ISO 10006 Guidelines for Quality Management in Projects and the Project Management Institute's Body of Knowledge (PMBOK). You will be provided with the tools and skills needed to ensure that all of their projects are successful. You will learn how to manage a project from beginning to end and will have the chance to put into practice their newly acquired skills. You will work on actual projects, developing your team, project scope and project plan. In addition you will complete a project risk assessment, understand the project change management and project close-out evaluation processes.

Objective

- Manage a project to the ISO 10006 Guidelines for Quality Management in Projects and guidelines contained in the PMBOK
- Understand all of the steps required to manage small and large projects from beginning to end
- Accelerate the development of project scope and plan development
- Create the team for small and large complex projects, and manage these projects on a global basis
- Clarify the roles and responsibilities of the project sponsor, project manager, project team members,

- and project stakeholders
- Understand the project issue management and change management process
- Create a risk management plan so that risks are proactively managed throughout the project
- Close out the project and retain project knowledge within the organization

Who Should Attend

This course is designed for team leaders, ISO project coordinators, Six Sigma coordinators, quality engineers, managers, supervisors and people who need to ensure their projects get done on time, and on budget and meet all customer requirements.

Course Content

- Introduction
- Project initiation
- Project definition
- Project planning
- Project execution
- Project close
- Conclusion

Course length: 3 days

Fee: \$9848

Minimum attendees: 6

*Travel expense for the ASQ Instructor is additional

Supervision Basics

This course will help the new, as well as the experienced, supervisor gain valuable skills in the challenging role of supervision. Often times, staff are promoted to supervisory positions and feel overwhelmed by the task of managing people and resources while maintaining quality and production standards.

Objective

This course will introduce participants to management concepts, tips, and techniques that will assist them in becoming a successful supervisor/manager. It will address topics that often get overlooked when training the new, as well as experienced, supervisor.

Who Should Attend

This course is designed for personnel who are planning to move into supervising, those who have been promoted recently, and those experienced in management or supervision who need a refresher.

Course Content

INTRODUCTION TO SUPERVISION (3 hours)

- What is supervision
- How will it change your life
- Setting standards and walking the line
- Supervising former peers and friends - the pitfalls to avoid
- Mutual expectations and agreement
- Coaching

TIME MANAGEMENT, PROJECT PLANNING AND GOAL SETTING (3 hours)

- Managing your time and your employee's time
- Setting work and project goals
- Managing a project and measuring progress

EFFECTIVE COMMUNICATION IN THE WORKPLACE (3 hours)

- Non-verbal communication
- Understanding the need for effective communication in the workplace
- Communication techniques
- Techniques for delivering feedback

ACCOUNTABILITY, ASSESSING NEGATIVE PERFORMANCE, RESOLVING CONFLICT (3 hours)

- Dealing with difficult people
- Techniques for delivering criticism
- Using progressive discipline to save a problem employee
- Understanding cultural, gender, age, and race diversity
- Accountability of the supervisor vs. the work team

ISSUES CONFRONTING THE EXPERIENCED SUPERVISOR (3 hours)

- Change readiness—dealing with change in the workplace
- Interactive problem solving and decision making
- Creating a quality culture
- Understanding the difference between managing and leading
- Adapting to and making the team approach work

Course length: 2 days

CEU credits: 1.6

Fee: \$579



Advanced Computer Numerical Control Techniques for Milling Centers

This course will give a basic understanding of CNC (Computerized Numerical Control) programming and its applications. It will provide the basic principles necessary to begin programming the HAAS as well as other CNC Milling Machines. In programming a CNC machine, the tool is controlled by a computer and is programmed with a machine code system that enables it to be operated with minimal supervision and with a great deal of repeatability.

Objective

This course provides a basic understanding of the control console and the placement of the keys, switches, displays, etc., that are pertinent to the operation of the machine. Participants learn how to set work-piece origin (G54), set tool lengths, write a part program, load a part program, debug and run the part program. Common and potential situations facing both CNC programmer and CNC operator will be emphasized.

Who Should Attend

This course is designed to benefit anyone interested in a basic understanding of CNC programming and its applications. Participants should have a basic understanding of machining practices and a working knowledge of math.

Course Content

- HAAS CNC controller components, functions, and interface
- Cartesian coordinate system and relationship with the movement of the CNC axes
- Programming syntax, coding, editing, and storage
- Programming coordinates: absolute and incremental
- Linear and circular interpolation
- Canned cycles
- Cutter compensation
- Planning, writing, and running a part program
- Producing an actual part, including setting work shift offsets and tool setting

Course length: 2 days

CEU credits: 1.6

Fee: \$579



Advanced Computer Numerical Control Techniques for Turning Centers

This course will give a basic understanding of CNC (Computerized Numerical Control) programming and its applications. It will provide the basic programming principles necessary to begin programming the HAAS as well as other CNC Lathes. In programming a CNC machine, the tool is controlled by a computer and is programmed with a machine code system that enables it to be operated with minimal supervision and with a great deal of repeatability.

Objective

This course provides a basic understanding of the control console and the placement of the keys, switches, displays, etc., that are pertinent to the operation of the machine. Participants learn how to set work-piece origin (G54), set tool lengths, write a part program, load a part program, as well as debug and run the part program. Common and potential situations facing both CNC programmer and CNC operator are emphasized.

Who Should Attend

This course is designed to benefit anyone interested in a basic understanding of CNC programming and its applications. Participants should have a basic understanding of machining practices, and a working knowledge of math.

Course Content

- HAAS CNC controller components, functions, and interface
- Cartesian coordinate system and relationship with the movement of the CNC axes
- Programming syntax, coding, editing, and storage
- Programming coordinates-absolute and incremental
- Linear and circular interpolation
- Canned cycles
- Cutter compensation
- Planning, writing, and running a part program
- Producing an actual part, including setting work shift offsets and tool setting

Course length: 2 days

CEU credits: 1.6

Fee: \$579



Blueprint Reading For Manufacturing

Blueprints are one of the most important communication tools that a company can possess. Blueprints must communicate ideas to many different people within an organization and, because of this, they must contain critical information about the part. Information takes space, and using "technical shorthand" helps keep this space to a minimum. Not only does the blueprint contain information, it is also a legal document that can be used in a court of law to prove negligence in a lawsuit. For these reasons, the effort to fully understand the blueprint cannot be taken for granted.

Objective

This course provides participants with an analysis of the general layout of a blueprint and shows them where to look for information. "Technical shorthand" is covered to provide the needed skills to interpret the blueprint and understand what the designer intended. There are frequent classroom exercises throughout to reinforce the learning process with practical applications of concepts.

Who Should Attend

This course is designed to benefit entry-level machinists, machine operators, assemblers, inspectors, and other manufacturing professionals who are interested in learning how to read blueprints and/or update their knowledge in this area.

Course Content

- Purpose of blueprints
- Blueprint layout and the information on a blueprint
- Multi-view projection
- Auxiliary and sectional views
- "Technical shorthand" and interpretation
- Dimensioning (fundamental rules) and basic standard applications
- General tolerancing and related principles
- Surface texture requirements

Course length: 1 day

CEU credits: 0.8

Fee: \$329



Computer Numerical Control Fundamentals

Computer Numerical Control Fundamentals is a one-day workshop that provides an overview of the basic concepts required in CNC programming and operations. Hands-on training will be provided on the HAAS simulators. Training on the HAAS mills allows participants to perform basic functions, such as setting a work fixture offset and setting tool lengths. In addition, career opportunities in the field of CNC are addressed.

Objective

This course provides a basic understanding of concepts required in both CNC programming and operations. Hands-on training will be stressed using both the HAAS simulators and mills.

Who Should Attend

This course is designed to benefit anyone interested in gaining a basic understanding of CNC operations and how they function.

Course Content

- CNC system elements
- CNC career opportunities
- Cartesian coordinate system and relationship with the movement of the CNC axes
- Understanding the CNC controller
- Setting work fixture offset
- Setting tool lengths
- Cutter compensation
- Loading and running a part program

Course length: 1 day

CEU credits: 0.8

Fee: \$329



Tooling U – Mechanics of CNC 110

Coordinate Measuring Machine Applications (CMMs)

Traditional measuring instruments can provide excellent solutions for the measurement of features such as length, height, width, inside and outside diameters, flatness, roundness, angles, and so on. The problem with traditional measurement techniques is that each measured feature may require individual inspection instruments and individual setups as well as allowing for increased human error. A coordinate measuring machine (CMM) can fill a valuable role in precision measuring because a surface plate, height gauge, and indicator inspection procedure are combined to provide a fast, accurate, and more convenient alternative to the conventional methods for measuring complex parts. The CMM can also be fully automated and linked to a CAD system as well as used to measure and verify Geometric Dimensioning and Tolerancing (GD&T) call outs. It would seem that CMMs offer the answer to all dimensional measurement problems but, is that really true? Will we get precisely the same results as the traditional methods? Measurement with a CMM is a complex process that requires the right training and interpretation of data collected.

Objective

This course will provide the participants with an appreciation of the principle differences between CMMs and traditional measurement methods. It will focus on developing an understanding of how best to use CMMs to tackle each type of GD&T callout and on important information as to how CMMs really measure and what that means relative to GD&T measurements. There will also be practical tips on how to maximize the accuracy of your CMM.

Who Should Attend

This course will benefit those responsible for quality, both directly and indirectly, who need to know about the latest techniques as well as metrology, quality, or manufacturing professionals charged with the responsibility of using CMMs to measure machined parts with or without GD&T call outs. Attendees should have a basic working knowledge of GD&T and some familiarity with CMMs.

Course Content

- Identifying what CMMs do well and how to take advantage of it
- Limitations of CMMs and how to get around them
- How to use CMMs to measure each type of GD&T callout
- Establishing an understanding of CMM use and the possible uncertainty for GD&T measurement
- Discovering some of the difficult geometries to measure and what to do about it
- Developing methods for good designer/inspector communication

Course length: 1 day

CEU credits: 0.8

Fee: \$329



Tooling U – Basics of CMM 120

Design for Manufacturing and Assembly

The most significant cost reductions and cost avoidances in manufacturing are those that result from changes to product design, rather than from changes in methods or systems. This course provides a framework for the product engineer and manufacturing engineer to aid them in making these kind of design improvements.

Objective

This course offers a systematic compilation of the principles of designing products for ease of production and assembly. It will aid the designer in taking advantage of the inherent cost benefits available in the manufacturing processes that will be used.

Who Should Attend

This course is intended for the product and manufacturing engineers, but is also suitable for value engineers, tool engineers, process engineers, cost reduction engineers, manufacturing supervisors and managers.

Course Content

- Detailed design recommendations and tips to aid in developing the most producible designs with each process
- Economical use of raw materials
- Formed metal components
- Machined components
- Castings
- Nonmetallic parts
- Assemblies
- Finishes

Course length: 1 day

CEU credits: 0.8

Fee: \$329



NEW



Dimensioning and Tolerancing Principles for Gauges and Fixtures

ASME Y14.43-2003

The goal of gauging is to accept all good parts and reject all bad parts. Manufacturing of gauging equipment introduces variability, making this impossible. Depending upon the tolerancing policy chosen, the size range of gauge elements may be larger, smaller, or straddle the boundaries they are inspecting. The tolerance policy chosen will determine whether borderline part features are accepted or rejected. The practice of gauge tolerancing requires a gauge designed with size tolerances and/or geometric tolerances as small as economically feasible.

Objective

This course contains information showing methods for creating gauges and fixtures for features that use principles found in ASME Y14.5M-1994, Dimensioning and Tolerancing. The course addresses GO gauges for measuring maximum material condition and NOGO gauges for measuring least material condition. Fixtures are also addressed as to how to properly simulate datum features. The understanding of proper gauge and fixture design is the key to understanding dimensioning and tolerancing for products in accordance with ASME Y14.5M.

Who Should Attend

This course is intended for anyone involved in the design and manufacturing of gauges and fixtures including manufacturing supervisors and managers.

Course Content

- Gauge design
- Dimensioning and tolerancing
- Material condition explanation
- Regardless of feature size
- Usage
- Fixtures
- Diamond pin construction
- Fixed pin construction
- Push pin construction
- Type 1
- Type 2

Course length: 2 days

CEU credits: 1.6

Fee: \$579



GD&T Level II

ASME Y14.5M-1994

Geometric dimensioning and tolerancing (GD&T) is a language for communicating engineering design specifications. When properly applied, GD&T is the language that designers use to translate design requirements into unambiguous and measurable specifications. Conversely, when it is improperly applied, GD&T can be a quandary for manufacturing and quality assurance professionals. For successful implementation of GD&T, it is mandatory that design, manufacturing, and quality assurance professionals have a uniform understanding and interpretation of GD&T and, at the same time, work together as a team to take advantage of all the inherent cost benefits available in the manufacturing/ assembly processes that will be used. The major emphasis of the course is to build upon the Level I course and guide participants through the four basic goals of GD&T, keeping in mind that a functional design is of paramount importance and that a design is not complete if it is not cost effective to manufacture. There will be frequent classroom exercises augmented with the use of models and PowerPoint presentations to ensure a solid grasp of fundamental concepts. The emphasis is on understanding rather than on mundane learning.

Objective

This course provides participants with a more in-depth treatment of the fundamental concepts, tools, and rules of the ASME Y14.5M-1994 standard and encourages cost effective cooperation among all those involved in the design, manufacturing, and inspection process. This course helps bridge the gap between the "ideal world" and the "practical world."

Who Should Attend

This course is designed to benefit design, manufacturing, and quality professionals seeking a thorough review of the ASME Y14.5M-1994 standard, as well as how the standard might be used as a communication tool to improve productivity and product quality in their organizations. Working experience in design, manufacturing, or inspection and a basic understanding of Y14.5M-1994 is beneficial but not required.

Course Content

- General review of the geometric dimensioning and tolerancing symbols
- Datum referencing
- Features of size with MMC, LMC, or RFS material condition
- Tolerances of location
- Tolerances of form, profile, orientation, and runout
- Functional design
- Cost-effective manufacturing

Course length: 3 days

CEU credits: 2.4

Fee: \$989

Tooling U – Intro to GD&T 200



Geometric Dimensioning and Tolerancing Consulting

In addition to corporate training, Pueblo Community College's Economic & Workforce Development provides individual consulting services. We can work with your staff, guiding and leading their Checking efforts. Let us work long or short term with your design staff, providing instant expertise in the proper usage of Geometric Dimensioning and Dimensioning to your designs and drawings.

If you are the design originator, PCC will:

- Apply geometric tolerancing to your design to communicate your requirements
- Review your drawings to check for accuracy and completeness.

If you interpret your customers' drawings, PCC will:

- Provide the proper interpretation of drawings and discuss manufacturing and inspection techniques.
- Upon your request, discuss design intent with your customer to clarify inconsistencies and inaccuracies on drawings.

 Call for (719) 549-3320 for additional information and fees.



High-Efficiency Metal Cutting

This course introduces the machine operator or technician to the theory of metal working and the importance of the proper selection of tooling, speed and feed, and coolant in the machining process.

Objective

This course is designed to provide the machine operator or technician with simple rules of thumb, combined with sound judgment in the selection of tooling, insert geometry, size and grade of inserts, depth-of-cut, speed and feed rate, and maximum allowable insert flank wear.

Who Should Attend

This course is designed for the machine operator or technician who is responsible in both single and multiple part production and needs to understand tooling and the impact on productivity.

Course Content

- Establishing operating conditions and tool life
- Selecting proper cutting tools
- Selecting inserts
- Physics of metal cutting
- Surface finish
- Analyzing tool life and insert failures
- Trouble shooting

Course length: 1 day

CEU credits: 0.8

Fee: \$329



Inspection Techniques and Precision Measurements

If you have conflict and dimensional variation in your products, it may be caused by using different methods of inspection and or interpretation. This course clarifies issues of drawing interpretation and correct inspection methods, additionally the course stresses where and when inspection should be done.

Objective

This course offers a working understanding of correct layout inspection methods as they apply to GD&T intended to give the participants practical experience with GD&T.

Who Should Attend

This course is ideally suited for manufacturing technicians, engineers and quality control inspectors.

Course Content

This one-day course provides a review of GD&T, with emphasis on the practical inspection methods with GD&T prints.

- A light review of ASME Y14.5M standard
- The important of Datum's for inspection requirements
- Inspection requirements for form tolerance: straightness, flatness, circularity, and cylindricity
- Orientation Tolerances: Parallelism, perpendicularity and angularity inspection techniques with standard inspection gauging and how to avoid gauging errors
- Runout and calculation for positional tolerances, plus the difficulties with concentricity inspection

Course Length: 1 day

CEU credits: 0.8

Fee: \$329



Manufacturing Basic Bundle

This course is a combination of key topics that are essential for incumbent employees in a manufacturing setting. In addition, this course is a good refresher for existing employees working in an industrial or manufacturing setting who need to improve their competencies in the areas of mathematics, blueprint reading, inspection techniques, and basic geometric dimensioning and tolerancing.

Objective

This course provides participants with the fundamentals that are critical in an industrial or manufacturing setting. Upon completion of this course, participants will have a better understanding of areas that impact the bottom line in the manufacturing environment.

Who Should Attend

This course is designed to benefit entry-level machinists, machine operators, assemblers, inspectors and other professionals who are interested in learning the essentials required in a manufacturing environment.

Course Content

MATHEMATICS

- Order of operations
- Fractions, addition, & subtraction
- Fractions, multiplication, & division
- Decimals
- Pythagorean Theorem
- Triangle measurement
- Circle measurement applications

BLUEPRINT READING

- Purpose of blueprints
- Blueprint layout and reading
- Multi-View projections
- Auxiliary and sectional views
- Technical shorthand and interpretation
- Dimensioning and basic standard applications
- General tolerancing and related principles
- Surface texture requirements

INSPECTION TECHNIQUES

- History and theory of measurements
- Terminology
- Steel rule and applications
- Micrometer and applications
- Calipers and applications
- Gauges and applications

BASIC GEOMETRIC DIMENSIONING & TOLERANCING

- History of GD&T
- Review of basic blueprint reading
- Symbology, terminology and characteristics
- Fundamental usage on a blueprint
- Basic applications
- Brief discussion of "True Position"

Course length: 2 days

CEU credits: 1.6

Fee: \$579



Mastercam

Mastercam strips away the clutter and focuses on what's important – your shop. Mastercam's full associability gives you the power to capture your knowledge and build on your experience. Once you program a part – any part – you can modify any element of the job and immediately get updated tool paths without starting over. Mastercam's intelligent NC programming lets you build a library of machining strategies – done the way you want them. Just choose saved operations and apply them to a part; Mastercam adapts them to the new model. It's easy and productive – the way programming should be.

Objective

Training can be provided to the level of training that suits your needs. Mastercam Level 1 focuses primarily on how to draw and machine basic mill and lathe parts. Mastercam Level 2 covers how to design and program complex 3-D shapes, like molds and aerospace components. Individual modules are designed primarily to sharpen your existing knowledge of Mastercam in specific areas where you may need additional training.

Who Should Attend

This course is designed to benefit CNC programmers, manufacturing engineers, designers, mold-makers, machinists, or anyone wanting to learn Mastercam. Select the level of training or individual modules that will best suit your needs. (Participants should have existing knowledge of manufacturing processes.)

Course Content

LEVEL ONE

- Computer essentials
- Basic CAD drawing
- Geometry modifications
- Advanced CAD drawings
- Basic contouring
- Basic pocketing
- Drill toolpaths
- Toolpath modifications & verifications
- Advanced pocketing
- Lathe toolpaths

LEVEL TWO

- Splines
- Basic surface modeling
- Advanced surface modeling
- Blending surfaces
- Surface finishing machine
- Toolpath projections
- Introduction to solid modeling
- Basic solid modeling
- Advanced solid modeling

**Course length: LEVEL ONE, 2 days
LEVEL TWO, 2 days**

CEU credits: 1.6 (per level)

Fee: \$579 each level



Metallurgy - As It Pertains To The Heat Treatment Of Metals

Objective

This course provides for a basic understanding of the heat treatment processes used within industry. It provides a basic understanding of the effects of the hardening and tempering processes commonly used in mill and manufacturing. It explains in detail how metals respond to the heat treatment process on the molecular level, and how the technician can effect and control the results during the process.

Who Should Attend

This course is designed for anyone that produces steel products that require any form of heat treatment to include hardening, tempering, annealing, normalizing, or any other heat treatment process used in manufacturing.

Course Content

- Introduction to basic metallurgical structures
- The heat/quench cycle and explanation of the TTT curves
- Process control and atmospheric considerations
- Quench medias and their applications
- Discussion on the pitfalls of the heat treatment processes and an explanation of terms

Course length: 1 day

CEU credits: 0.8

Fee: \$329



Optical Comparator Basics

Optical comparators continue to thrive in the manufacturing environment. Comparators can be found in almost all machines shops and have helped create everything from cell phones to hard drives. Comparators can measure many features extremely well and it offers quick, reliable answers, free of complexities.

Objective

This course addresses the basic components of an optical comparator and how it measures—by motion and comparison.

Who Should Attend

This course is intended for anyone involved in using an optical comparator to measure part features, it is also suited for manufacturing engineers, tool engineers, process engineers, cost reduction engineers, manufacturing supervisors and managers.

Course Content

This one-day course covers the basic components of an optical comparator, how it works and how it measures.

- Components of an optical comparator
- Measurements
 - By motion of the part
 - By comparison of the part
- Illumination techniques
 - Direct projection
 - Reflected image (coaxial)
- Edge detection
- Hands-on measurement of features

Course length: 1 day

CEU credits: 0.8

Fee: \$329



Reading Shop Prints & Drawings including Introduction to GD&T Level I

ASME Y14.5M-1994

To undertake a career in precision metalworking the craftspeople must learn to understand a new language. That is, to read the blueprint, the universal form of communication in machine shops and manufacturing plants.

Objective

The objective of this course is to provide the attendees with the proper visualization skills to interpret 3-D parts drawn in 2-D, and understand the various dimensioning schemes found on blueprints. It will also provide the craftspeople with the skill to interpret the symbology use in the ASME Y14.5M-1994 GD&T standard.

Who Should Attend

This course is well suited for metalworking personnel who must interpret engineering drawings. These include machine operators, quality control inspectors, CNC programmers, shop supervisors and engineering managers.

Course Content

- Introduction to shop prints
- Lines and their uses in orthographic projections
- Auxiliary views and sectional views
- Dimensioning on drawings
- Geometric Dimensioning and Tolerancing and surface texture requirements
- Metrics and metric drawings
- Castings, forgings, and weldments
- Sketching techniques
- Practical exercises in reading blueprints

Course length: 2 days

CEU credits: 1.6

Fee: \$579



Society of Manufacturing Engineers Training Courses

Pueblo Community College is now affiliated with the Society of Manufacturing Engineers and can bring their "World-Class" training to your company's location. And, as a result of this partnership, these courses can now be offered at a discounted price. SME's Corporate Training Department offers over 250 relevant topics in manufacturing, engineering, quality, packaging, assembly & joining, electronics, finishing & coating, forming & fabrication, heat treating & metallurgy, lasers, networking & communications, plastics, and management fields.

About SME

The Society of Manufacturing Engineers is the world's leading professional society supporting manufacturing education through its member programs, publications, expositions, and professional development resources. SME promotes an increased awareness of Manufacturing engineering and helps keep manufacturing professionals up-to-date on leading trends and technologies.

Course Instructors

SME/CT maintains a resource list of over 300 active instructors who are known as the best in class in their related field. It is SME/CT and PCC's objective to provide our clients with instructors who know their material and know how to communicate with their audience. It doesn't make sense to do it any other way.

Topics

Even though SME offers over 250 topics, we have targeted the "Top 24" courses that we believe fit the needs of this area's industrial and manufacturing sectors. By combining resources, we can ultimately deliver the best training products for your company's needs. If you don't see what you're looking for, please contact us for a complete listing of courses or visit the SME web site at www.sme.org/corptrain, then call us for special pricing.

Courses

Welding Aluminum & Non-Ferrous Metals..... Two-Day
Welding Codes & Standards Fundamentals..... One-Day

AUTOMATED MANUFACTURING

Computer Integrated Manufacturing Strategies... Three Day
Effective Manufacturing Cells Two-Day

FORMING & FABRICATING

Changeover Time Reduction Two-Day
Setup Reduction for Metal Fabrication Processes Two-Day

HEAT TREATING & METALLURGY

Metallurgy & Heat Treatment of Aluminum
and its Alloys One-Day
Lasers in Production Operations Three-Day

MACHINE DESIGN

Bearing Calculations & Design Two-Day
Precision Machine Design Two-Day

MANUFACTURING MANAGEMENT

Benchmarking One-Day
Project Management for Engineers Three-Day

MATERIAL REMOVAL/MACHINING

Quick Change Tooling and Tool Management Strategy
for CNC Machining Centers and Lathes Two-Day
Vibratory and Other Mass Finishing Methods Two-Day

MATERIAL OF INTEREST

Mechanical Properties of Materials Two-Day

PLANT ENGINEERING, MAINTENANCE AND ERGONOMICS

ISO 14000 One-Day

PLASTICS

Designing Injection Molded Parts for Assembly ... Two-Day
Injection Molding Fundamentals Two-Day

PRODUCT DESIGN

Design for Manufacturability and Assembly Two-Day
Measurement, Inspection and Gauging Level 1 Three-Day

QUALITY

ISO 9000 Implementation Two-Day
QS 9000 Automotive Standard: Implementation .. Two-Day

TOOL, FIXTURE AND DIE DESIGN

Designing Low Cost Fixtures for Workholding One-Day
Modular Fixturing One-Day

 Call Us for Course Pricing Information



Solidworks

Pueblo Community College along with MCAD Technologies, Inc. has partnered to bring you quality training programs on the popular CAD software SolidWorks. MCAD Technologies, Inc. is an Authorized Training, Testing and Support Center that can provide training with their products here on the college campus through the Economic & Workforce Development Division. Below are a few of the products that can be delivered, for more information and specific pricing please contact a Pueblo Community College or MCAD Technologies, Inc. representative at either of the numbers listed below. Certification through MCAD Technologies, Inc. training is also available.

Objective

These courses are designed to quickly bring the SolidWorks user up to production level using all the features —beginning to advanced — available within SolidWorks.

Who Should Attend

This course is designed to benefit anyone using SolidWorks — from the first time user to anyone who has prior knowledge of a CAD system. It is designed for the SolidWorks user who needs to learn all the features of SolidWorks

Suites Available

- SolidWorks
- SolidWorks Professional
- SolidWorks Office Premium

Courses:

- SolidWorks Essentials — 4 days
- SolidWorks Drawings — 2 days
- Advanced Part Modeling — 2 days
- Advanced Assembly Modeling — 2 days
- Advanced Surface Modeling — 2 days
- Mold Design Using SolidWorks — 1 day
- Sheet Metal — 1 day
- Weldments — 1 day
- SolidWorks Routing — 1 day
- SolidWorks Wiring — 1 day
- SolidWorks File Management — 1 day
- PDMWorks Workgroup Contributor — 1/2 day
- PDMWorks Workgroup Contributor and Viewer — 1/2 day
- PDMWorks Workgroup for Solidworks — 1 day
- PDMWorks Quick Start — 1/2 day
- PDMWorks Quick Start — 1 day
- SolidWorks Core Bundle — 10 days
- SolidWorks Core Bundle and Certification Exam — 11 days
- Modeling Bundle — 8 days
- Essentials Bundle — 6 days
- Advanced Modeling — 4 days
- Routing Bundle — 2 days
- Sheet Metal & Weldments Bundle — 2 days
- COSMOS Premium Bundle — 3 days
- COSMOS Professional Bundle — 4 days



PCC: 719.549.3320 – Call for Information
MCAD technologies, Inc.: 303.969.8844



Tooling U – CAD/CAM
Overview 160



Tolerance Stack-up Using GD&T

ASME Y14.5M-1994

This course provides designers and engineers with a tool that will allow them to understand the consequences of tolerance stack-up and their relationship to product performance. Unfortunately, designers often view tolerance stack-up as either a 'black art' that they don't understand or as not a vital part of the total design.

Objective

This course will introduce participants how to apply tolerance stack-up analysis to a wide variety of assemblies with the objective to create product that:

- Contains parts that fit together well
- Performs desired functions efficiently
- Maximizes tolerances to create a cost effective manufacturing part

Who Should Attend

This course is directed to anyone with the professional responsibility of analyzing or applying tolerances to assemblies, or anyone seeking a more thorough understanding of tolerance analysis. Attendees should have knowledge of the ASME Y14.5M-1994 standard.

Course Content

- Basic tolerance stack-up analysis
- Analysis of an assembly using plus and minus tolerancing
- Vertical vs. horizontal analyses for features of size
- Trigonometry and proportions in tolerance stack-up analysis
- Theory of statistical Probability

Course length: 2 1/2 days

CEU credits: 2.0

Fee: \$689



Pueblo Community College is proud to be affiliated with Tooling U, the leading provider of online training for manufacturers. Tooling U believes that manufacturers survive based on the talent and expertise of their people and training is the heart of a talented workforce. Pueblo Community College and Tooling U are now combining efforts to bring you the most complete and comprehensive training available. Throughout our catalog you will find our "jump start" icon referring you to this Tooling U page. The courses on this page are a complimentary foundation for our hands on courses. For course fees and more information on these classes please visit the Tooling U website at www.toolingu.com.

AC Motor Applications 240

This class describes the common parts of AC motors as well as different types and their applications, maintenance, and troubleshooting concerns.

Basics of Ladder Logic 220

This class describes the basic principles of ladder logic, identifies the symbols used to program a PLC and explains the primary logic functions those symbols create.

Basics of the CMM 120

This class identifies the major types and components of the coordinate measuring machine and describes the coordinate system.

Basics of the CNC Machining Center 130

This class describes the basic parts of the machining center as well as the devices used on this machine. ***Includes an Interactive Lab***

Basics of the CNC Turning Center 120

This class describes the basic parts of the turning center as well as the devices used on this machine. ***Includes an Interactive Lab***

Blueprint Reading 130

This class identifies the information communicated on a blueprint with emphasis on interpreting the part drawing. ***Includes an Interactive Lab***

CAD/CAM Overview 160

This class describes the general process of using computers to design and manufacture parts and identifies common features available in CAD/CAM software.

Calibration Fundamentals 210

This class describes the calibration process and explains how measuring instruments are traced back to national and international standards. ***Includes an Interactive Lab***

Cutting Fluids 210

This class identifies the major cutting fluids and their common uses.

DC Motors 230

This class focuses on DC motors, their main parts, and how they are used and maintained.

Electrical Units 110

This class describes how electricity flows and explains the basic units used to measure electricity.

Haas Lathe: Control Panel Overview 255

This class describes the various sections of the Haas lathe control panel as well as the steps for powering up, powering down, and homing the machine. ***Includes Haas CNC Simulators***

Haas Mill: Control Panel Overview 250

This class describes the various sections of the Haas mill control panel as well as the steps for powering up, powering down, and homing the machine. ***Includes Haas CNC Simulators***

Hole Inspection 240

This class explains different hole characteristics and describes how specific gages are used for different hole inspection applications. ***Includes an Interactive Lab***

Intro to Electric Motors 200

This class discusses how various types of electric motors are applied throughout industry and the principles behind motor operation.

Intro to GD&T

This class introduces the fundamental concepts of geometric dimensioning and tolerancing (GD&T) and describes the main types of tolerances included in the standard. ***Includes an Interactive Lab***

Intro to PLCs 200

This class introduces the parts and operations of programmable logic controllers (PLCs) and describes the functions and different programming languages you will find on most PLCs.

Intro to Six Sigma 170

This class covers the basic concepts of Six Sigma, including data analysis, types of variation, common and special causes, the roles of Six Sigma team members, and the DMAIC method.

Lean Manufacturing Overview 130

This class describes the basic principles of lean manufacturing and compares them to traditional manufacturing approaches. *Includes an Interactive Lab*

Math: Fundamentals 100

This class explains how to add, subtract, multiply, and divide to solve a problem following the correct order of operations.

Mechanics of CNC 110

This class describes how parts and tools move in CNC systems.

Milling Geometry 245

This class identifies and explains the angles that impact a milling operation. *Includes an Interactive Lab*

Parallel Circuit Calculations 205

This class introduces the rules and formulas for parallel circuit calculations.

PLC Inputs and Outputs 240

This class covers different types, configurations, capacities, and current conversions for PLC I/Os.

Quality Overview 100

This class identifies the key components of a quality organization. The relationship between processes and products are explored through different roles in a manufacturing company.

Series Circuit Calculations 200

This class covers the formulas and rules for calculating the values of voltage, current, resistance, and power in direct-current series circuits.

SPC Overview 210

This class describes the main concepts of statistical process control and explains how to recognize processes that are affected by special causes. *Includes an Interactive Lab*

Speed and Feed Selection 300

This class identifies the various speed and feed values used with the lathe and mill and describes how to convert these variables. *Includes an Interactive Lab*

Statistics 220

This class covers the main concepts of statistics and relates these concepts to shop situations.

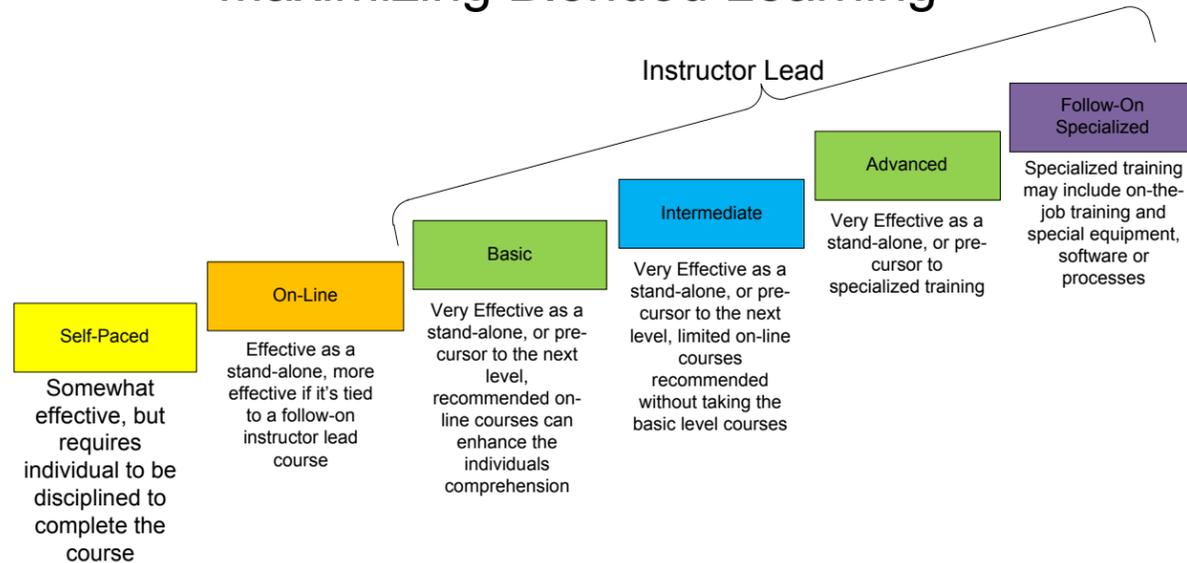
Thread Inspection 250

This class describes common screw threads, their standards, and the common methods and devices used to inspect them. *Includes an Interactive Lab*

Tool Geometry 240

This class identifies the major angles that impact the turning operation. *Includes an Interactive Lab*

Maximizing Blended Learning



To provide a more comprehensive approach for training your employees, the workforce development professionals have established strategic partnerships with high quality on-line training organizations such as Tooling University, Ed-2-Go, and others that when blended with instructor lead courses can significantly improve the learning outcomes. On-line courses can also serve as a pre-assessment tool to identify the skill level of your employees prior to training and assist us with the appropriate level of course they should attend. Look for the on-line course icons in this catalog for applicable recommended (but not required) pre-cursor courses.

Total Productive Maintenance (TPM)

Total Productive Maintenance (TPM) is a series of methods that ensure every piece of equipment in a production process is always able to perform its required tasks so that production is never interrupted. It is a comprehensive, team-based, continuous activity that enhances normal equipment-maintenance activities and involves every worker. TPM focuses on eliminating:

- Downtime
- Performance Losses, and
- Yield Losses

All flow of the product and 'lean manufacturing' improvements are impossible to achieve if there is a lot of equipment downtime. Eliminating downtime becomes a shared goal for the plant and the organization and it is achieved by:

- Improving equipment condition (original condition)
- Shifting some basic maintenance to production (autonomous maintenance)
- Improving and sustaining preventative maintenance (PM program and schedules)
- Creating teams to solve problems (continuous improvement)

Objective

This workshop provides a basic understanding of Total Productive Maintenance, and hands-on training will be stressed.

Who Should Attend

This course is designed to benefit anyone interested in gaining an understanding of total productive maintenance. Participants should have a basic understanding of machining practices and a working knowledge of math.

Course Content

- Classroom training and floor work on operating and evaluating equipment (5S and OEE)
- Classroom and floor work on operating and evaluating equipment (modification, countermeasures, history, safety, and OEE) and discussing predictive tools
- Floor work on cleaning, inspecting, repairing, developing countermeasures and modifying equipment
- Floor work on applying visual controls and developing planned and preventative maintenance checklists
- Floor work on developing a Critical Spare Parts Checklist, and a final presentation to management and co-workers

Course length: 3 days

Fee: \$850

Minimum attendees: 12



Twist Drills, Reamers, and Rotary Cutting Devices

Objective

The objective of this course is to provide the student with an expanded understanding of the use, design, construction, maintenance, and application of Drills, Reamers, and other rotary cutting devices.

Who Should Attend

This course is designed specifically for persons in the mechanical trades, Millwrights, mechanics, machinists, and mechanical apprentices.

Course Content

- Identification of drill types
- Design considerations and applications of all types of drill bits
- Drill bit maintenance including hand sharpening and machine sharpening
- Reamer types, their uses and applications
- Hole saw types and their applications

Course length: 1 day

CEU credits: 0.8

Fee: \$329



Bearing Identification

Principles and applications of bearings, bearing seals, lubrication and maintenance practices will be covered in this class at a high level of overview. Friction and anti-friction bearings will be discussed. This course is designed to provide skills in understanding the proper installation and maintenance of bearings and the importance of proper lubrication in various industrial applications. Sizing bearings and their mating shafts or devices will be explored as well as the types of bearings that are used in various applications.

Objective

This course will provide the participants with the skills to:

- Gain a more in-depth understanding of proper sizing of bearings
- Learn to use common precision measuring tools to measure bearings etc.
- Develop troubleshooting skills by utilizing failure analysis techniques
- Gain a familiarity of use by hands-on exercises
- Understand what lubrication can do to extend or shorten the life of your equipment

Course Content

- Proper selection of bearings/ Nomenclature
- Friction Bearings
- Anti-friction bearings
 - Roller
 - Tapered roller
 - Ball
 - Cylindrical
 - Spherical
 - Sealed
 - Shielded
- Installation/Shaft and bearing fits
- Dimensions and identification numbers
 - Hands on exercises

Course length: 2 ½ days

CEU credits: 2.0

Fee: \$689



Fasteners and Screw Threads

This course is designed to provide skills in understanding the proper application and definition of common fastener hardware in various industrial settings with an emphasis on understanding various types of fasteners and threads for the application. Proper installation techniques will be discussed.

Objective

This course will provide the participants with the skills to:

- Gain a more in-depth understanding of fasteners and screw threads
- Develop troubleshooting skills to determine what can be done to minimize fastener failure
- Understand sizing, calculations and reference data with regards to fasteners and threads

Course Content

- Different types of fasteners commonly used in the industry
- Fastener designs
- Fasteners types and applications
- Proper care and installation of fasteners
- Proper fastener techniques
- Correct tools for fastener installation
- Understanding fastener failures
- U.S. Thread designations
- U.S. versus Metric thread designations

Course length: ½ day

CEU credits: 0.4

Fee: \$199

Who Should Attend

This course is designed to benefit maintenance technicians, systems technicians, engineers at an entry level, supervisors in maintenance or any staff involved with the support of mechanical systems.



Hand Tools – Identification and Proper Use

The misuse of common hand tools is a major source of injury to maintenance and construction workers because it is assumed that “everyone knows” how to use common hand tools. Observation and the record of injuries show that this is not the case. The Use of Hand Tools is aimed at promoting the safe and efficient use of hand tools, measuring devices, and portable power tools and machine tools.

Objective

This course will provide the participants with general safety rules to follow when working with tools. Covers anticipation of hazards; the importance of using the right tool for the job; personal protective equipment; tool maintenance and safety practices for hammers, chisels, punches, screwdrivers, pliers, wrenches, hand/power saws and drills.

Who Should Attend

This course is intended for the maintenance and construction worker and the supervisor who must ensure that the employees are using the tools properly.

Course Content

- Discuss safety rules to follow when using hand tools
- Discuss the proper application of various hand tools and learn how to make sure your tools stay in safe condition
- Discuss the dangers associated with tools such as: saw blades, knives, or other sharp tools
- Explain the need to use special tools when you work near a flammable substance
- Demonstrate the protective equipment needed when working with hand tools

Course length: 1 day

CEU credits: 0.8

Fee: \$329



Hydraulics–Level I - Industrial

PCC is a member of the National Fluid Power Association

This is an introduction to the basic concepts of industrial maintenance of hydraulic systems. It will include instruction in theory and application.

Objective

This course teaches new maintenance technicians the principles of hydraulic systems as well as the theory behind the applications. This course is a prerequisite for Hydraulics Level II and Level III.

Who Should Attend

This course is designed to benefit maintenance technicians, systems technicians, engineers, supervisors in maintenance or any staff involved with the support of hydraulic systems.

Course Content

- Hydraulics concepts and applications
- Basic safety, lockout/tagout procedures
- Hydraulic principals and formulas
- Level 1 schematics overview
- Fluids familiarization
- Reservoirs
- Level 1 positive displacement pumps familiarization
- Level 1 pressure control valves
- Level 1 directional control valves
- Level 1 actuators
- Level 1 circuit construction and troubleshooting

Course length: 3 days

CEU credits: 2.4

Fee: \$849



Hydraulics–Level II - Industrial

PCC is a member of the National Fluid Power Association

This course builds upon the Level I content with hands on experience with construction of simple to intermediate circuits. Other topics covered include contamination control, Fluid conductors and seals and an introduction to cartridge and manifold construction. Intermediate troubleshooting is also discussed.

Objective

This course will provide the participants with the skills to:

- Gain a more in-depth understanding of the theory behind hydraulic systems and proper operation
- Develop better troubleshooting skills
- Gain an understanding of component identification
- Setup and operate various hydraulic circuits with an array of components

Who Should Attend

This course is designed to benefit maintenance technicians, systems technicians, engineers unfamiliar with hydraulic systems, supervisors in maintenance or any staff involved with the support of hydraulic systems. **(Level 1 Hydraulics is a pre requisite to this course)**

Course Content

- Review of hydraulic principals
- Hydraulic circuit construction
- Level II Hydraulic schematics
- Level II Fluids
- Contamination control concepts
- Fluid conductors and seals
- Level 2 positive displacement pump identification
- Level 2 Directional Control Valve identification
- Quick disconnect concepts and identification
- Cartridge valve familiarization

Course length: 2 days

CEU credits: 1.6

Fee: \$579



Hydraulics–Level III - Industrial

PCC is a member of the National Fluid Power Association

This course builds upon the Level I and Level II content and takes the theory further with additional discussion on simple thru more complex systems and components. In addition, Electrohydraulic systems are discussed along with other more specialized valve concepts and applications such as cartridge and manifold systems.

Objective

This course will provide the participants with the skills to:

- Gain a more in-depth understanding of the theory behind hydraulic systems and proper operation
- Develop troubleshooting skills
- Gain an understanding of control systems and how they function
- Setup and operate various hydraulic circuits with an array of components including basic electrohydraulic systems.

Who Should Attend

This course is designed to benefit maintenance technicians, systems technicians, engineers, supervisors in maintenance or any staff involved with the support of hydraulic systems. **(Level 1 and Level II Hydraulics are a pre requisite to this course)**

Course Content

- Review of hydraulic schematics, formulas and applications
- Contamination control filtration concepts and selection
- Cartridge valve identification
- Manifold block application for cartridge valves
- Introduction to Proportional and Servo valves
- Specialized valve concepts and application
- Circuit design and troubleshooting

Course length: 2 days

CEU credits: 1.6

Fee: \$579



Introduction to Hydraulics & Pneumatics

PCC is a member of the National Fluid Power Association

This is an introduction to the basic concepts of hydraulic systems and pneumatic systems. The class is intended as an introduction to basic hydraulics and pneumatics. This class is NOT intended to substitute for Hydraulics or Pneumatics Level 1.

Objective

This fast paced course teaches the fundamentals of hydraulic and pneumatic theory and application to the student. Discussion centers around basic hydraulic and pneumatic theory, system components and applications.

Who Should Attend

This course is designed to benefit maintenance technicians, systems technicians, engineers, supervisors in maintenance or any staff involved with the support of hydraulic and pneumatic systems and needs an introduction to the basics of these systems.

Course Content

- Basic theory-hydraulics
- Basic Systems overview
- Schematics for hydraulics and pneumatics
- Reservoirs
- Fluids
- Pumps
- Pressure controls
- Directional Valves
- Basic theory-pneumatics
- Basic system overview
- Compressors
- Air dryers
- Filters/regulators/ lubricators
- Valves
- Introduction to Vacuum

Course length: 3 days

CEU credits: 2.4

Fee: \$849



Lubrication

This course is designed to provide skills in understanding with a basic overview of the types of lubrication used in the industry. Oils and greases are covered and include mineral based lubricants and synthetic lubricants. Discussion will include the various types of oil and greases, API classifications, ISO classifications etc. A review of the importance of adequate filtration will also take place including the ISO system for contamination control. Discussion on proper oil sampling, storage, handling will be an important part of the discussion.

Objective

This course will provide the participants with the skills to:

- Gain a more in-depth understanding of oils and greases for the industry
- Develop good handling practices at the fluid transfer system level
- Understand various classifications for different lubricants.

Who Should Attend

This course is designed to benefit maintenance technicians, systems technicians, engineers at entry levels, supervisors in maintenance or any staff involved with the support of fluid systems.

Course Content

- Lubrication defined
- Greases
- Oils
- Mineral based lubricants
- Synthetic lubricants
- ISO and API classifications
- Contamination control
- Good handling practices
- Best practices for Storage and handling of bulk materials
- Best practices for oil sampling
- Preventative maintenance practices

Course length: 1 ½ days

CEU credits: 1.2

Fee: \$429



Metrology - Mechanical

This course is designed to provide skills in understanding the differences between normal and precision measurements and to learn to use various types of precision measuring devices. The class will cover a variety of measuring devices ranging from steel rules and scales to vernier calipers, outside English micrometers, inside micrometers, depth micrometers, dial indicators etc. The class will consist of lecture as well as hands on with various types of precision measuring devices. U.S as well the Metric system will be discussed and compared.

Objective

This course will provide the participants with the skills to:

- Gain a more in-depth understanding of non precision and precision measuring devices
- Develop personal skills to properly measure items using precision devices
- Proper care and operation of precision measuring devices
- Use a vernier scale to allow very precise measurements

Who Should Attend

This course is designed to benefit maintenance technicians, systems technicians, engineers, supervisors in maintenance or any staff involved with the support of mechanical systems.

Course Content

- Fundamentals of measurement
- Definition and use of US fractional scales
- Vernier calipers and scales
- Outside micrometers
- Inside micrometers
- Depth micrometers
- Calipers- dial and digital
- Dial indicators

Course length: 1 day

CEU credits: 0.8

Fee: \$329



Packing and Seals

This course is designed to provide skills in understanding the function, construction and proper application of packing and seals in various industrial settings. Discussion will include the various materials used, and the installation and care of packing and seals.

Objective

This course will provide the participants with the skills to:

- Gain a more in-depth understanding of packing and sealing systems and material for the industry
- Develop troubleshooting skills at the fluid transfer system level
- Understand sizing, calculations and reference data

Who Should Attend

This course is designed to benefit maintenance technicians, systems technicians, engineers at entry levels, supervisors in maintenance or any staff involved with the support of fluid systems.

Course Content

- Definitions/familiarizations
- Sealing challenges
- Static gaskets and seals
- Packings
- Mechanical seals
- O rings
- Formed and molded packing

Course length: 1 ½ days

CEU credits: 1.2

Fee: \$429



Piping & Hoses

This course is designed to provide entry level skills in understanding the proper application of piping, hoses, tubing, valves and fittings in various industrial settings. Understanding the selection of piping, hoses, tubing, valves and fittings will be explored. Sizing correctly for system operation will be studied.

Objective

This course will provide the participants with the skills to:

- Gain a more in-depth understanding of piping, hoses, tubing, valves and fittings
- Proper system preventive maintenance
- Understand sizing, calculations and reference data

Who Should Attend

This course is designed to benefit maintenance technicians, systems technicians, engineers, supervisors in maintenance or any staff involved with the support of fluid systems.

Course Content

- Pipe familiarization
- Tubing familiarization
- Hose familiarization (hydraulic and pneumatic)
- Valves familiarization
- Fittings familiarization

Course length: 2 days

CEU credits: 1.6

Fee: \$579



Pneumatics Level I – Industrial

PCC is a member of the National Fluid Power Association

This course will cover the basics of familiarization of pneumatic components, laws, operation and maintenance for pneumatic systems. Participants will receive instruction in theory, function and application.

Objective

This course teaches new and existing maintenance technicians the principles of industrial pneumatics. Various components including compressors, valves, and support systems are covered. A Level II course can be arranged to provide more in-depth hands on experience for participants with various components and circuits.

Who Should Attend

This course is designed to benefit maintenance technicians, systems technicians, engineers who need a basic familiarization of pneumatics, supervisors in maintenance or any staff involved with the support of pneumatic systems.

Course Content

- Basic physics
- Compressors
- Air Dryers
- Air Preparation
- Air Distribution
- Actuators
- Directional Valves
- Miscellaneous Valves
- Accessories
- Air Line Conductors
- Vacuum fundamentals
- Understanding Schematics

Course length: 2 days

CEU credits: 1.6

Fee: \$579



Power Transmission - Mechanical

This course is designed to provide skills in understanding a wide variety of mechanical power transmission devices and systems. There's a special emphasis on maintaining systems as well as installing mechanical drives and supporting devices.

Objective

This course will provide the participants with the skills to:

- Gain a more in-depth understanding of mechanical power transmission systems
- Develop troubleshooting skills at the device and system level
- Proper system operations and preventive maintenance
- Understand sizing, calculations and reference data

Who Should Attend

This course is designed to benefit maintenance technicians, systems technicians, engineers, supervisors in maintenance or any staff involved with the support of mechanical power transmission systems.

Course Content

- Flat belt familiarization
- Power belt familiarization, types and applications
- Power belt formulas for replacement and installation
- Power belt troubleshooting
- Power chain familiarization
- Power chain formulas for replacement and installation
- Power chain troubleshooting
- Basic gear terminology and design

Course length: 3 days

CEU credits: 2.4

Fee: \$849



Pumps

Objective

This course describes different types of pumps and explains their operation and maintenance. The course covers both positive and non-positive displacement pumps as commonly used in the industrial as well as other markets. Students will learn the differences between and advantages of various pumps. Practical applications will be discussed.

Who Should Attend

This course would be suitable for the technician, supervisor, marketing representative or others who are associated with pumps of various types and covers a broad range of subject matter.

Course Content

- Basic hydraulic and pneumatic theory as it applies to pumps
- Positive displacement pumps
- Non-positive displacement pumps
- Centrifugal pumps
- Reciprocating pumps
- Rotary pumps
- Pneumatic pumps
- Water well pumps
- Specialized pumps
- Basic troubleshooting

Course length: 3 days

CEU credits: 2.4

Fee: \$849



Shaft and Coupling Alignment

This course is designed to provide skills in understanding a wide variety of mechanical power transmission devices and systems. There is a special emphasis on different types of coupling devices including rigid and flexible coupling devices. Different alignment methods are discussed including manual, dial indicator and laser alignment.

Objective

This course will provide the participants with the skills to:

- Gain a more in-depth understanding of mechanical power transmission systems
- Develop troubleshooting skills at the device and system level
- Proper system operations and preventive maintenance
- Alignment using manual, dial indicator and laser techniques.

Who Should Attend

This course is designed to benefit maintenance technicians, systems technicians, engineers, supervisors in maintenance or any staff involved with the support of mechanical power transmission systems.

Course Content

- Rigid coupling familiarization
- Flexible coupling familiarization
- Level 1 manual alignment
- Level 2 Dial indicator alignment
- Level 3 Laser alignment

Course length: 1 ½ days

CEU credits: 1.2

Fee: \$429



Small Engine Maintenance and Troubleshooting

This course provides an understanding of small engine fundamentals and service procedures.

Objective

This course introduces concepts, terminology, and hands-on skill in the maintenance and basic repairs of small two and four cycle engines such as used in lawn mowers, chain saws, and snow blowers and other small under 20 horsepower equipment.

Who Should Attend

This course is intended to benefit maintenance workers and do-it-yourselfers alike. Attendees will find the practical information useful to maintain small engines in working order along with diagnostic steps.

Course Content

- Different types of engine construction and principles of operation
- A comparison of different types of engines: Gasoline, LPG, Diesel
- List the advantages and disadvantages of two and four cycle engine
- Explain the importance of proper fuel-oil mixture in a two cycle engine
- Fundamentals of an ignition system
- Function of lubrication oil
- Air cooled vs. liquid cooled systems.
- Fundamentals of troubleshooting
- Use engine service manuals to determine engine specifications
- Basic engine disassembly and reassembly
- Checking engines for wear and reuse

Course length: 1 ½ days

CEU credits: 1.2

Fee: \$429



H2S Gas Awareness

The gases covered are hydrogen sulfide, hydrogen cyanide, benzene, sulfur dioxide (SO₂), and carbon dioxide. Student will make small group presentations to the class on gas awareness. A final assessment will be given to participants to ensure accuracy of learning concepts.

Objective

Students receive a pocket card upon successful completion that is required to work on an H₂S identified site. Training is good for one year, and the pocket card carries the expiration date. A Refresher class when taken prior to the expiration date is a 2-3 hour course.

Who Should Attend

This course is suitable for any person working in or around a work site with potential gas hazards. This can include gas and oil production and exploration sites.

Course Content

Training topics include:

- Requirements of the ANSI and other industry standards
- American Petroleum Institute (API) best practices
- Chemical information
- Methods of detection
- Hazard control
- Acute and chronic exposure consequences
- All types of PPE
- Toxicity, signs and symptoms
- Routes of entry and target organs
- Burning and flaring characteristics
- Developing a Contingency Plan
- Case studies

Course length: 1 day

CEU credits: 0.8

Fee: \$249



Cost of Quality: Finance for Continuous Improvement

(Formerly "Quality Cost Principles")
 Provided by ASQ

Surveys show a vast majority of companies either overlook or are unaware of the concept of Cost of Quality (CoQ). Quality costs (actual plus hidden) can amount to a large proportion of sales often 25% or more. Successfully use CoQ to strategically manage your improvement projects with bottom-line results.

Improve customer satisfaction, competitiveness, and financial performance by understanding the link between quality improvement and profits. Learn to select, manage, and strategically use CoQ improvement projects within your organization.

You'll get the information you need to:

- Manage projects within your respective organization
- Measure point-in-time CoQ by establishing a baseline
- Prove the value of CoQ to leadership
- Apply the concepts of CoQ and continuous quality improvement within your projects or organization.

Objective

- Identify and apply key Cost of Quality (CoQ) principles, including critical success factors
- Apply CoQ to different types of improvement initiatives and perform calculations regarding supplier CoQ
- See how project-based and systematic quality approaches can support and benefit each other
- Use CoQ data collection and analysis strategies to meet business goals of reducing risks, lowering costs, and other measures
- Identify key change leadership principles that can help enable CoQ implementations

Prerequisites

You should have some background in quality principles and terminologies. You should also know something about cost allocation techniques, methods of estimating the value of partially processed product, and the transactional processes within your organization.

Who Should Attend

This course was designed for professionals seeking to initiate cost based measurement or improvement programs in their respective organizations or anyone who wants to add to their knowledge of effective measurement systems and quality standards.

Course Content

- Foundations of CoQ
- Applying CoQ
- Blending Project-based and Systematic Quality Approaches
- Collecting and Analyzing CoQ Data
- Using CoQ for Continuous Improvement

Course length: 2 days

Fee: \$6930

Minimum attendees: 6

*Travel expense for the ASQ Instructor is additional

Introduction to Quality Management – Revised

Provided by ASQ

This course provides comprehensive review and working knowledge of key elements represented by ASQ's Certified Manager of Quality/Organizational Excellence and Certified Quality Improvement Associate Bodies of Knowledge and the Malcolm Baldrige National Quality Award performance excellence criteria. The course is designed to provide participants with the QM principles, techniques, tools and skills for on-the-job application useful in a wide range of businesses and organizations—service, manufacturing, government, education, healthcare, etc. The course is taught using adult learning principles including Discovery Learning techniques and a Learning and Action Planning Log to maximize content retention and usage. Although not designed as a certification refresher, this course will help seasoned quality professionals brush up on the key elements of QM.

Objective

- Apply QM concepts and tools to create value the first week back on the job
- Compare and contrast the Baldrige model for business excellence vs. ISO 9000:2000
- Be able to understand a strategic planning and deployment process for improvement, performing a SWOT analysis and reviewing current models/tools such as balanced scorecard, scenario planning and Hoshin planning/policy
- Develop aligned goals, long- and short-term objectives and plans, for their functions
- Understand current practices in customer and market requirement definition, satisfaction/retention, and product and process design, including completing a QFD relationship matrix
- Know when and how to use fundamental QC and QA elements to control, correct and improve processes and products. Includes the use of a problem solving process and quality tools, control plans and charts, process capability, audits, supplier quality management, documentation, calibration, and measurement quality

Who Should Attend

- Professionals who face the challenges of helping their organization focus and deploy common goals, strategies, plans and customer requirements
- Directors, managers, supervisors and team leaders who are required to apply a fact-based design, control and accelerated-improvement process that achieves performance results
- New and experienced people in quality who want to use the QM framework and proven approaches and tools to be more effective on the job

Course Content

- Introduction and basics
- Leadership, organizational and HR issues
- Strategic planning
- Customer and market focus
- Information and analysis
- Process management

Course length: 5 days

Fee: \$11376

Minimum attendees: 6

*Travel expense for the ASQ Instructor is additional

ISO 9001:2000 Internal Process Auditing

Provided by ASQ

This three day course provides auditor candidates with an understanding of the auditing process. Learn interviewing techniques, how to plan and execute and audit, including how to properly write reports and follow-up on findings. This course is structured to include role-playing, workshops and a shop-floor audit. Participants will gain the skill and knowledge necessary to effectively carry out internal process audits of their company's quality management system.

Objective

- Develop an understanding of the internal audit system from a process auditing perspective.
- Learn how to successfully conduct internal audits of a quality system.
- Learn the eight Quality Management Principles – new philosophy.
- Review the ISO 9001:2000 standard – understand customer satisfaction and continual improvement.
- Identify the differences from the ISO 9000:1994 to ISO 9000:2000 utilizing current documentation.
- Learn the principles and practices of auditing, including interview techniques, writing effective reports and follow up findings.

Who Should Attend

This course is designed for people designated to manage and participate in the internal audit process.

Course Content

Day One

- Introduction
- Objectives
- Quality Management System – 2000
- Hierarchy of Documentation
- Understanding the ISO 9001 Standard
- 1994 vs. 2000 Changes
- The Language
- Record Requirements
- Discussion

Day Two

- Complete the Review of the Standard
- Audit Phases
- Process Auditing

Day Three

- Conduct a "Live" Audit

Course length: 3 days

Fee: \$6644/6

\$6697/7

\$7305/8

\$7636/9

\$7966/10

Minimum attendees: 6

*Travel Expense for the ASQ Instructor is additional

ISO 9001:2000 Lead Auditor Training (RABQSA)

Provided by ASQ

To become a lead auditor: If you satisfactorily achieve the required pass points for the written examination and the required minimum grading for the continuous assessment, you will receive a "Successful Completion" certificate to demonstrate that you have met the training requirement for individual QMS auditor certification by the RABQSA. Before becoming a Lead Auditor, there are also professional requirements that must be met, including conducting a number of verifiable audits, educational requirements, workplace experience and sponsorship.

This RABQSA certified course meets the training requirements for RABQSA Quality Management Systems Lead Auditors, Auditors and Provisional Auditors. This course makes extensive use of student activities and case studies to help students fully understand the requirements of auditing to the ISO 9001:2000 standard. Lecture time is held to a minimum providing students time to learn and then practice their newly acquired skills in real-life audit situations that assure that students are prepared to conduct effective audits.

Objective

- Fully understand the requirements of ISO 9001:2000
- Understand and be able to apply the proper interpretation of the standard in actual audit situations
- Know how to tailor an audit interview based on the requirements of the standard and obtain audit evidence from this interview.
- Know how to plan and conduct effective audits.
- Know how to manage the audit process, including opening meetings, auditing, closing meetings and reporting.

Bonus: The ANSI/ISO/ASQ Q9001:2000 Quality Management Standard Requirements are included with this course.

Who Should Attend

All individuals who want to become RABQSA-certified auditors and those assisting their organizations toward ISO 9000 registration, particularly in manufacturing and service organizations. This course will benefit Quality directors, managers, engineers, auditors, ISO coordinators, directors of international ventures, laboratory quality professionals and anyone responsible for leading an audit.

Course Content

- Introduction
- Terminology and definitions
- Background history and rationale of quality management
- Intro to Q9000/ISO 9000
- Analysis of the contents of Q9000/ISO 9000
- Analyzing audit findings
- Audit to ISO 9000 and quality manual
- RABQSA Certification Program
- QMS auditor qualifications
- Roles and responsibilities of auditors
- The audit checklist
- Preparation for an audit
- Conducting an audit and compiling the findings
- Documentation in the quality system
- Planning and conducting audits
- The closing meeting and the audit report
- The closing meeting

Course length: 5 days

Fee: \$8847/5

\$9068/6

\$9288/7

\$9508/8

Minimum attendees: 5

*Travel expense for the ASQ Instructor is additional

Mistake – Proofing

Provided by ASQ

Preventing mistakes before they happen is one of the simplest methods that can help a company reach its quality goals, improve efficiency, and decrease costs.

This one-day mistake-proofing course is highly effective in helping organizations reduce and even eliminate product defects. The use of a variety of simple, usually inexpensive devices, can keep errors from eroding your company's profits. This course teaches you how to implement a mistake-proofing system, get management on board, and involve your production team in the process. Not only will you learn how and why this system works, but you will also learn to solve practice problems to help illustrate how mistake-proofing can help you in your particular situation. Learn how to promote the ability to provide problem-solving support—regardless of process involvement or expertise.

Objective

- Gain knowledge in applying mistake proofing techniques helpful in assisting their company achieve zero defects process quality
- Learn practical methods to slash the high cost of non-quality
- Gain a working knowledge of the shop floor tools used achieve zero defects
- Implement the Seven Criteria of Mistake-Proofing making it “bulletproof”
- Gain organizational leadership through use of the Five Mistake-Proofing Imperatives
- Be able to rate the quality of mistake-proofing devices with the Ten Point Scoring Technique
- Learn master tips and techniques developed by the instructor to effectively implement mistake-proofing

Who Should Attend

This course is designed for executives, managers, supervisors and engineers.

Course Content

- Show technical results which have been achieved in seven major companies
- Technical breakout group participation
- Technical demonstration of Mistake-Proofing as the only way to achieve defect-free product
- Technical reasons paradigms prevent achieving zero defects
- Four key points to overcome past paradigms
- Technical application of 0.99 quality yield
- Technical understanding of the human element in manufacturing quality
- Categorization of error sources
- Technical grounding in differences between errors and mistakes
- Categorization of error sources
- Technical grounding in differences between errors and mistakes
- The differentiation of defects, mistakes and errors
- Error detection results without technical aids
- Technical application of 0.999 quality yield
- Shigeo Shingo technical explanation of poka yoke theory
- Demonstration of traditional SPC as a trailing indicator
- Traditional quality system self checks and successive checks
- Explanation of lot testing, SPC or sampling inspection presume some level of acceptable defects

Course length: 1 day

Fee: \$6930

Minimum attendees: 6

*Travel expense for the ASQ Instructor is additional

Principle of Lean Enterprise Philosophies Applied to Health Care

PROVIDED IN PARTNERSHIP WITH CAMT

Hospitals today face a great challenge. Reimbursement levels are declining, costs are climbing, and revenues are falling and qualified staff are in short supply. The first reaction is to use traditional cost cutting methods. Hospitals have been forced to repeatedly implement cost cutting measures to stay profitable. Although these efforts may allow hospitals to keep pace with falling revenues and climbing costs, traditional cost cutting is not sufficient to get ahead of this cycle. As many manufacturing companies have been forced to do to survive, hospitals can learn to establish systems that allow people to follow processes that maintain low costs while serving a higher volume of patients.

Objective

The goal of a Lean Enterprise is to establish processes that allow people to execute them flawlessly every day. A process is simply a set of defined and related tasks that are performed to achieve a defined outcome. Lean Health Care is a system that allows you to develop, improve, and sustain superb processes. Lean Health Care achieves results rapidly by allowing workers to focus the improvement attention on the actual place where the value is created using a team-based approach to change.

- Balance workload to customer demand (Takt Time & Cycle Time)
- Connect value added processes (Process Flow)
- Become responsive to customer demand (Pull System)
- Optimize the entire process, not single processes (Toyota Production System)

By emphasizing the overall efficiency of the health care system, countermeasures to problems are found by groups of individuals, allowing all units and departments to better focus on the objective – greater patient satisfaction at a lower cost.

Who Should Attend

Medical directors, CEO's, CFO's, directors of nursing, risk managers and quality assurance directors, and other senior-level executives, including nurse executives, physician leaders, and management teams.

Course Content

- Discussion of Lean process objectives
- Definition of key concepts
- Effects of lean time and batching
- Seven wastes in health care
- Lean implementation tools
- Comparison of Lean vs. traditional methods
- Live simulation to practice what you have learned

Course length: 1 day

Fee: \$200

Minimum attendees: 20

Principles of Production and Inventory Control

Participants will learn how to describe types of inventory and their costs, how they relate to manufacturing operations, and techniques for inventory management. By comparing the concepts of MRP/EOQ techniques with the theory of constraints, just-in-time, and Lean manufacturing, participants will investigate the impacts of each on profitability.

Objective

This course is designed to give the participant an overview of production and inventory control methods. By introducing the various techniques utilized in the manufacturing environment, the participant will have a greater understanding of the concepts they will be exposed to on the job.

Who Should Attend

This course is designed to benefit individuals who are currently working in the field of production or inventory control who need a refresher, and new employees seeking an introduction to this vital area of manufacturing operations.

Course Content

- Describing and discussing the types of inventory, their cost, and how they relate to manufacturing operations
- Techniques for inventory management
- Comparing the concepts of MRP/EOQ techniques and their impacts on profitability with the theory of constraints, just-in-time, and Lean Manufacturing
- Identifying and discussing just-in-time, one-piece flow, Lean Manufacturing, theory of constraints, and MRP

Course length: 2 days

CEU credits: 1.6

Fee: \$579



Quality Control and Inspection Certificate

This certificate program provides a source of learning for specific methods and techniques that can be used to ensure functional inspection of the ASME Y14.5M-1995 Geometric Dimensioning & Tolerancing Standard universal to most prints used to manufacture products. The proper use of measuring instruments, data analysis and techniques of statistical quality control, including frequency distributions, process control charts, six sigma concepts and sampling plans. In addition, the course work provides a basis for practical implementation of these techniques in the quality control system of an industrial organization.

Objective

The objectives of this course are to provide the quality control technicians with the skills to take a blueprint interpret the inspection requirements, select proper measurement instruments and/or inspection fixturing to ensure functional inspection of geometric tolerances. Prepare an inspection process sheet to record data for data analysis and techniques for using statistical quality control.

Who Should Attend

This course is ideally suited for quality control technicians, engineers, quality control inspectors and/or engineers.

Course Content

- Blueprint reading with Geometric Dimensioning & Tolerancing (ASME Y14.5M-1994)
- Quality control and inspection
- SPC for manufacturing

Course length: 6 days

CEU credits: 4.8

Fee: \$1679

Quality Control and Inspection

This course provides the fundamental skills required to perform basic and precision dimensional measurements, including the use of rules, scales, tape measures, calipers, micrometers and the introduction of Statistical Process Control (SPC).

Objective

The objectives of this course are to provide the machine operator or technician with the skills to take a process sheet for a part and verbal instructions, identify and select the required measuring instruments and conduct the required inspection procedure(s). Complete required written inspection report and make a decision to accept or reject component parts.

Who Should Attend

This course is ideally suited for machine operators, technicians, engineers, and quality control inspectors.

Course Content

- Identification of measuring instruments
 - Micrometers
 - Calipers
 - Height gages
 - Protractors
 - Radius gauges
 - Gage pins
 - Steel rule and tape measure
- Hands-on usage of measuring instruments
- Accuracy, repeatability, reliability of measuring instruments
- Reading an inspection plan and part print
- Inspection of sample parts
- Making accept/reject decisions based on inspection results
- Recording of data using SPC

Course length: 2 days

CEU credits: 1.6

Fee: \$579



Root Cause Analysis

Provided by ASQ

This course will enable participants to understand root cause analysis as a procedure for ascertaining and “analyzing” the causes of problems in an effort to determine what can be done to solve or prevent them. Consisting of lectures, practice, and role-playing, this course is designed to provide attendees with an in-depth understanding of how to analyze a system in order to identify the root causes of problems. This three-day course will help enable you to:

- Enhance problem-solving effectiveness by providing a model for in-depth analysis of problem situations
- Clarify the difference between analytical and creative thinking, and when each is most useful
- Promote the ability to provide problem-solving support in situations where one is not an expert in the process or technology involved
- Expand the range of tools available for analysis of problem situations

Objective

- Differentiate between problem solving and root cause analysis
- Implement five steps for carrying out effective root cause analysis
- Select from, and apply a variety of tools that support root cause analysis
- Critique and support root cause analysis carried out by others
- Develop possible cause generation
- Identify and select solutions

Who Should Attend

This course is designed for quality, safety, risk and reliability managers, process engineers, technicians, operations supervisors and personnel, process owners, occurrence investigators, analysts, maintenance directors, reliability professionals and anyone who wants to improve their ability to solve recurring problems.

Course Content

- The difference between problem solving and root cause analysis
- Problem understanding
- Identifying possible cause generation and focusing
- Data collection
- Data analysis
- Cause and effect analysis
- The rest of the problem-solving process

Course length: 3 days

Fee: \$8881

Minimum attendees: 6

*Travel expense for the ASQ Instructor is additional

Six Sigma Black Belt Training

Provided by ASQ

Black Belts implement the principles, practices and techniques of Six Sigma for maximum cost reductions. This is a four-week session of rigorous and applied training over a four-month period.

Each student must bring to the first session a management-approved Black Belt project. For more details on project selection, please contact your ASQ Six Sigma Specialist at 800-248-1946.

Prerequisites

- Intermediate-level familiarity with laptop computers
- Basic college-level algebra (helpful for statistics applications)
- Management-approved business improvement project that will provide a bottom-line business improvement to the organization by \$100,000 or greater. Project must be brought to the “first” session. For more details on project selection, please contact your ASQ Six Sigma Sales specialist
- Laptop computers are required. *Participants* must provide own laptop computers with the following minimum requirements:

Hardware

Processor: Pentium® III or higher processor • Hard Disk Space: 3 GB minimum • Memory (RAM): 128 MB minimum; 256 MB recommended • CD-ROM Drive: 10X or higher • Display with 1024 x 768 pixel or higher resolution

Software

Microsoft Windows® 98/2000/NT/ME/XP • Microsoft Office® 98 or higher • Minitab® 15 Statistical Software (required and must be provided by the registrant) • iGrafx® Process™ for Six Sigma 2007 (required and must be provided by the registrant) • Adobe Reader

Course Materials (provided by ASQ)

Investment in the ASQ Six Sigma Black Belt program includes 20 days of classroom training by a skilled and highly experienced Master Black Belt instructor.

Participants receive:

- ASQ’s Six Sigma Black Belt Training CD-ROM (contains all 4 weeks of training in Adobe Reader format plus all electronic exercise worksheets and reference material)
- Printed course manuals for all four weeks of training
- A copy of *The Black Belt Memory Jogger* book
- Continental Breakfast each day of training
- Lunch on Monday-Thursday

Course Content

Session One

- Understanding Six Sigma
- Developing the language of Six Sigma and statistics
- How to compute and apply basic statistics
- How to establish and benchmark process capability

Session Two

- Understanding the theory of sampling and hypothesis testing
- How to apply the key statistical tools for testing hypotheses
- Understanding the elements of successful applications planning
- How to apply and manage the breakthrough strategy
- How to identify and leverage dominant sources of variation
- How to establish realistic performance tolerances

Session Three

- Understanding the basic principle of experimentation
- How to design and execute multivariable experiments
- How to interpret and communicate the results of an experiment
- How to plan and execute a variable search study

Session Four

- Understanding the basic concepts of process control
- How to construct, use, and maintain charts for variables data
- How to construct, use, and maintain charts for attribute data
- How to implement and maintain pre-control and post-control plans
- How to plan and implement process control systems

Course length: 10 Days

Fee: \$88715 for 6 – 10 attendees

Minimum attendees: 6

*Travel expense for the ASQ Instructor is additional

The Lean Six Sigma Yellow Belt

Objective

This Six Sigma Yellow Belt course teaches any employee the Lean Six Sigma philosophy and how to apply it in his or her role on a day-to-day basis. The participant will learn about What Six Sigma and Lean are separately and how they work together. The participant will continue their exploration of each phase of the Six Sigma's DMAIC methodology, including, project charters, process mapping, cause-and-effect tools, simple data analysis and process improvement and control methods.

Who Should Attend

This course is ideal for any employee of an organization who desires to or is required to know about Six Sigma and its DMAIC methodology without spending the time, effort and expense necessary for Black Belt training.

Course Content

- The meaning and uses of the Six Sigma philosophy
- Each phase of the DMAIC methodology
- The basics of the Lean methodology
- How to apply the Six Sigma mindset in his or her workplace on a daily basis

Course length: 4 days

CEU credits: 3.2

Fee: \$1109



Statistical Process Control Methods for Long and Short Runs

Develop the foundation for important statistical concepts by analyzing a variety of real world data sets; learn how to match the appropriate statistical tool to your own applications and how to correctly interpret statistical output to quickly reveal problems with a process or to show evidence of an improvement.

Objective

The objective of this course is to provide the attendees with a variety of Statistical Process Control (SPC) tools for various industrial applications and to enhance the learning process through direct steps, practical problems, and solutions. This course focuses on how to use SPC for process control.

Who Should Attend

This course is recommended for machinists, inspectors, engineers, quality managers, buyers, SPC facilitators, and others who want to enhance their knowledge of SPC methods.

Course Content

- Introduction to Statistical Process Control
- Traditional variables control charts
- Short-run variables control charts
- Traditional attributes control charts
- Short-run attributes control charts
- Pattern analysis
- Process capability
- Problem-solving techniques and tools

Course length: 2 days

CEU credits: 1.6

Fee: \$579



Tooling U – Intro to Six Sigma 170

Basic Rigging

This class provides an entry level opportunity for the worker who is involved in overhead lifting. The class covers basic rigging practices including rigging plans, discussions of what can cause problems with a lift, the rigging triangle, load control and hardware selection and inspection. This is a good entry level class for a new person involved in rigging or a refresher on proper operating practices for existing occasional riggers.

Objective

This course is designed to provide the attendee with the fundamentals required by the rigging industry including best practices, rigging plans, hardware and sling selection and inspection.

The training includes a combination of lecture, discussion, videotapes, written material, and practical instruction, including demonstrations of the equipment and practice exercises performed by the trainee depending on the length of the class.

Who Should Attend

This course is designed for all employees who are new to rigging or are only occasional users.

Course Content

- Risk management and planning
- Rigging principals
- Rigging triangle
- Application of hardware
- Application of slings
- Inspection of hardware
- Inspection of slings

Course length: 2 hours to 1 ½ day

CEU credits: 0.2 to 1.2

Fee: \$75-\$429



Forklift Operator Training and Certification

Employers are now required to ensure that all operators of powered industrial trucks at every worksite are certified as competent to operate the equipment. They also must maintain a file of the current certification and training record for each such operator.

Objective

This course is designed to provide the attendee with the fundamentals required by the Code of Federal Regulations Part 1910.178. The regulation is applicable to operators of all mobile, power-propelled trucks used to carry, push, pull, lift, stack, or tier materials including those that are driven and those that function with a walking operator. Rough terrain, straight-mast, and extended-reach forklift trucks are specialized construction industry equipment whose operators are included in the regulations. Drivers of earth-moving and over-the-road haulage vehicles are not. The training includes a combination of lecture, discussion, videotapes, written material, and practical instruction, including demonstrations of the equipment and practice exercises performed by the trainee.

Who Should Attend

This course is designed for all employees who must be certified to operate powered industrial trucks.

Course Content

- Truck-specific operating instructions, warnings and precautions
- Differences between trucks and automobiles
- Truck controls and instrumentation
- Engine or motor operation
- Steering and maneuvering
- Visibility (including restrictions due to loading)
- Fork and attachment adaptation, operation and use limitations
- Vehicle capacity and stability
- Vehicle inspections, maintenance, refueling and/or charging of batteries
- Composition of loads to be carried, load stability, load manipulation, stacking and unstacking
- Pedestrian traffic, restrictive operating areas and ramps or other sloping
- Surface conditions that could affect the operating characteristics of the vehicle
- Environmental considerations that could result in a buildup of hazardous fumes or exhaust
- Refresher/retraining requirements

Course length: 1 day

CEU credits: 0.8

Fee: \$329

***For certification, the course must be taught at the facility and on the equipment operators will utilize on the job.**



MSHA: New Miner – Surface Mining

This course is approved by the Mine Safety Health Administration and follows 30CFR part 48 training requirements. All successful completers will receive certification from MSHA.

Objective

This course will provide participants with the skills and certification to obtain employment as a surface miner.

Who Should Attend

This course is designed for individuals seeking employment in the mining industry at a surface mining facility or for workers who do contract work at surface mines.

Course Content

- Miner's rights
- Health and safety
- First aid
- Transportation
- Fires and explosions
- Surface mining methods

Course length: 2 days

CEU credits: 1.6

Fee: \$579



MSHA: New Miner – Underground Mining

This course is approved by the Mine Safety Health Administration and follows 30CFR part 48 training requirements. All successful completers will receive certification from MSHA.

Objective

This course will provide participants with the skills and certification to obtain employment as an underground miner.

Who Should Attend

This course is designed for individuals seeking employment in the mining industry at an underground mine.

Course Content

- Miner's rights
- Self-rescue and respiratory devices
- Entering and exiting the mine
- Health and safety
- First aid
- Transportation
- Clean up and rock dusting
- Roof or ground control and ventilation
- Hazard recognition
- Mine gases
- Fires and explosions
- Underground mining methods

Course length: 4 days

CEU credits: 3.2

Fee: \$1109



MSHA: Experienced Miner – Annual Refresher Training

This course is approved by the Mine Safety Health Administration and follows 30CFR part 48 training requirements. All successful completers will receive certification from MSHA.

Objective

This course will provide experienced miners with the safety skills and certification needed to maintain employment as a miner.

Who Should Attend

This course is designed for individuals current employed in the mining industry.

Course Content

- Escape and emergency evacuation plan
- Health and safety
- First aid
- Transportation controls and communication systems
- Clean up and rock dusting
- Roof or ground control and ventilation
- Hazard recognition
- Fires and explosions
- Accident prevention

Course length: 1 day

CEU credits: 0.1

Fee: \$199



OSHA 10-Hour for Construction

This course combines one-hour modules to bring the attendee a relevant course addressing employee safety and health awareness. Attendees will be introduced to OSHA policies, procedures, and standards, as well as construction industry safety and health principles. Upon completion of this course, the attendee will be able to identify the common causes of accidents and fatalities in hazardous areas of construction as well as to identify abatement techniques for hazards found in construction.

Objective

The purpose of this course is to train construction personnel in OSHA construction standards with an overall goal of reducing accidents at the work site.

Who Should Attend

This course is designed to benefit entry-level carpenters, masonry and concrete workers, plumbers, roofers, drywall installers and electricians.

Course Content

Mandatory Topics (One Hour Each)

- Introduction to OSHA Standards including:
 - OSH Act/General Duty Clause 5(a) (1)
 - General safety and health
 - Provisions, competent person, Subpart C
 - Record keeping (CFR Part 1904)
- Electrical, Subpart K
- Fall protection, Subpart M

Optional Topics (Choose at least 3 topics - must add up to 3 hours: One-half to One hour each)

- Personal protective and lifesaving equipment, Subpart E
- Materials handling, storage, use and disposal, Subpart H
- Tools - hand and power, Subpart I
- Scaffolds, Subpart L
- Cranes, derricks, hoists, elevators and conveyors, Subpart N
- Excavations, Subpart P
- Stairways and ladders, Subpart X

Course length: 10 hours

CEU credits: 1.0

Fee: \$359



OSHA 10-Hour for General Industry

Objective

Demonstrate your commitment to workplace safety and compliance by having OSHA Authorized Safety Instructors deliver the OSHA 10 Hour General Industry Safety Course for your employees. The first half of the OSHA 10 hour General Industry Course covers certain OSHA mandated topics. The remaining 5 hours of the class can be customized to address other OSHA General Industry topics that pertain specifically to your operations.

Who Should Attend

This 10-hour class is intended for entry level workers, but is suitable for any employer to ensure that workers are more knowledgeable about workplace hazards and their rights, and contribute to our nation's productivity.

Course Content

OSHA DESIGNATED TRAINING TOPICS

Introduction to OSHA, including:

- OSH Act
- General Duty Clause 5(a)(1)
- Inspections, citations, and penalties (CFR Part 1903)
- Record keeping (CFR Part 1904)

Mandatory: (One Hour Each)

- Walking and working surfaces, Subpart D
- Exit routes, emergency action plans, fire prevention plans, and fire protection, Subparts E & L
- Electrical, Subpart S

Optional Topics: (Pick at least 3 must add up to 3 hours)

- Flammable and combustible liquids, Subpart H
- Personal Protective Equipment (PPE), Subpart I
- Lockout/Tagout, Subpart J
- Permit-required confined spaces, Subpart J
- Materials handling, Subpart N
- Machine guarding, Subpart O
- Welding, cutting, and brazing, Subpart Q
- Hazard communication, Subpart Z
- Introduction to industrial hygiene/bloodborne pathogen, Subpart Z
- Recordkeeping, 29 CFR 1904
- Ergonomics
- Safety and health programs

Course length: 10 hours

CEU credits: 1.0

Fee: \$359



OSHA 30-Hour for Construction

This is a 30-hour comprehensive course intended for entry level employees and those in supervisory positions. This OSHA-approved curriculum includes 21 hours of required topics which may be expanded upon to complete the required 30 hours, or supplemented with other topics appropriate for construction. Participants who attend the required time and pass a final examination will receive a certificate of completion from the US Department of Labor, Occupational Safety & Health Administration.

Objective

The purpose of this 30-hour training course is to explain current regulations and promote compliance with those regulations.

Who Should Attend

Course is designed to benefit anyone who wants to gain hands-on skills to better meet OSHA regulations and build an employee training program that fulfills OSHA requirements and qualify for 30 hours of voluntary OSHA compliance training.

Course Content

OSHA DESIGNATED TRAINING TOPICS

Mandatory Topics: (Two hours each)

- Introduction to OSHA Standards including:
 - OSH Act/General Duty Clause 5(a) (1)
 - Record keeping: 29 CFR 1904
 - General safety and health provisions, competent person, Subpart C
 - Clarification of Citation Policy Regarding 29 CFR 1926.20, 29 CFR 1926.21 and
 - Related general safety and health provisions; Safety programs
- Electrical, Subpart K
- Fall protection, Subpart M

Optional Topics: (Pick at least 6 topics must add up to 14 hours: One-half to One hour each)

- Occupational health & environmental controls (Hazard Com.), Subpart D
- Health hazards in construction, Subpart D
- Personal protective and lifesaving equipment, Subpart E
- Fire protection and prevention, Subpart F
- Materials handling, storage, use and disposal, Subpart H
- Tools - hand and power, Subpart I
- Welding and cutting, Subpart J
- Scaffolds, Subpart L
- Cranes, derricks, hoists, elevators and conveyors, Subpart N
- Motor vehicles, mech. equip. & marine Oper; rollover protective structures and overhead protection and signs, signals and barricades, Subparts O, W and G
- Excavations, Subpart P
- Concrete and masonry construction, Subpart Q
- Steel erection, Subpart R
- Stairways and ladders, Subpart X
- Confined space entry

Course length: 30 hours

CEU credits: 3.0

Fee: \$939



OSHA 30-Hour for General Industry

(English or Spanish)

This is a 30-hour comprehensive course ideal for anyone with safety and health responsibilities and for employee safety and health awareness. This course covers all the topics in the OSHA 10-Hour General Industry Course plus additional OSHA approved topics. Participants who attend the required time will receive a certificate of completion from the US Department of Labor, Occupational Safety and Health Administration.

Objective

The purpose of this 30-hour training course is to explain current regulations and promote compliance with those regulations in the workplace.

Who Should Attend

This course is designed to benefit anyone who wants to gain hands-on skills to better meet OSHA regulations, build an employee training program that fulfills OSHA requirements and/or qualify for 30 hours of voluntary OSHA compliance training.

Course Content

OSHA DESIGNATED TRAINING TOPICS

Introduction to OSHA (Two hour)

- OSH Act
- General Duty Clause 5(a)(1)
- Inspections, citations, and penalties (CFR Part 1903)
- Record keeping (CFR Part 1904)

Mandatory (Two hours each)

- Walking and working surfaces, Subpart D
- Exit routes, emergency action plans, fire prevention plans, and fire protection, Subparts E & L
- Electrical, Subpart S

Optional Topics

Choose at least 6 topics - must add up to 14 hours (One-half to One hour each)

- Flammable and combustible liquids, Subpart H
- Personal Protective Equipment (PPE), Subpart I
- Lockout /Tagout, Subpart J
- Permit-required confined spaces, Subpart J
- Materials handling, Subpart N
- Machine guarding, Subpart O
- Welding, cutting, and brazing, Subpart Q
- Hazard communication, Subpart Z
- Introduction to industrial hygiene/bloodborne pathogen, Subpart Z
- Record keeping, 29 CFR 1904
- Ergonomics
- Safety and health programs

Course length: 30 hours

CEU credits: 3.0

Fee: \$939



Topic Specific Safety

Select from the topics below to build a safety training program to meet your company's specific needs.

1-hour topics

- AIDS in the workplace
- Bloodborne pathogens
- Disability in the workplace
- Drug-free workplace
- Ladder safety
- Lockout/tagout
- Sexual harassment for employees
- Sexual harassment for managers
- Slips, trips, and falls
- Violence in the workplace

2-hour topics

- Hazard communication
- Hearing conservation
- Heat and cold stress
- Introduction to defensive driving
- Introduction to OSHA
- Personal protective equipment (Construction)
- Personal protective equipment (General Industry)
- Respiratory Protection

4-hour topics

- Asbestos (General Industry)
- Electrical safety (Construction)
- Electrical safety (General Industry)
- Ergonomics in the office
- Excavations (Construction)
- Fall protection
- Forklift safety
- Materials handling (Construction)
- Permit-required confined spaces (Overview)
- Pollution prevention
- Scaffolds (Construction)
- Spill prevention control and countermeasure (SPCC)

8-hour topics

- DOT hazardous materials general awareness
- DOT training for drivers of hazmat shipments
- DOT training for offerers of bulk and non-bulk hazmat packages
- DOT training for offerers of non-bulk hazmat packages
- Permit-required confined spaces (with Rescue)
- Storm water pollution prevention

CEU credits: 0.1 for every 1 hour of course length

Fee: \$45 (1 hour)

\$75 (2 hour)

\$199 (4 hour)

\$329 (8 hour)



Welding - Introduction

This course will introduce the participant to welding equipment, its setup, operation, and application using one of the following processes: Stick (SMAW), MIG (Metal Inert Gas) or TIG (Tungsten Inert Gas).

Objective

This course gives the participant an understanding of the welding process, its typical uses in the workplace, and safety associated to the welding occupation.

Who Should Attend

This course is designed to benefit beginning welders or those in need of a refresher course as well as managers who desire to understand the processes in use at their facility.

Training At Your Location

If your company provides equipment for use and applicable scrap material is supplied for practice, the cost for this course can be reduced. A recommended list of tools for trainees will be provided prior to the course.

*Class material cost, based on 6 trainees, is estimated at \$150 per person.



Course Content

- Equipment safety
- Application
- Basic system
- Basic material science
- Setup
- Fillet, lap joint and v-groove welds
- Equipment operation
- Process recommendations
- Oxy-acetylene cutting
- Hands-on exercises

Course length: 5 days

CEU credits: 4.0

Fee: \$1929 for Steel

(add \$400 for Aluminum or Stainless Steel)

**These courses can be combined or customized to suit specific customer needs*



WO12

Welding - Intermediate

This course is designed to improve the participants' basic knowledge of welding in the specific area or areas that are covered in the intro courses and expand and build on these skills.

Objective

As a continuing education course, Intermediate Welding will move participants from basic to more advanced welding techniques. It will provide instruction for the welder in vertical, overhead and horizontal out-of-position welding.

Who Should Attend

This course is designed for participants who have a good understanding of and experience with welding. Attendees should possess a desire to continue their knowledge of welding and its processes and be interested in advancing to certification.

Training At Your Location

If your company provides equipment for use and applicable scrap material is supplied for practice, the cost for this course can be reduced. A recommended list of tools for trainees will be provided prior to the course. Class material pricing, based on 6 trainees, is estimated at \$150 per person.

Course Content

- Blueprint reading
- Material science
- Isometric drawings
- Material preparations
- Trade related math
- Application/process recommendations
- Layout and fabrication
- Weld joint configurations
- Hands-on exercises

Course length: 7 1/2 days

CEU credits: 6.0

Fee: \$2899 for steel

(add \$400 for Aluminum or Stainless Steel)



Welding - Advanced

The participants in this course should have considerable experience in welding or have completed the intermediate welding classes. Areas covered here will be related to advanced processes and techniques.

Objective

This course is designed to prepare the welder for operating in the maintenance and manufacturing environment and as a preparation for company standards testing. They should exhibit enough proficiency in welding to use this class as an opportunity for company standard certification.

*This is not an AWS prep course.

Training At Your Location

If your company provides equipment for use and applicable scrap material is supplied for practice, the cost for this course can be reduced. A recommended list of tools for trainees will be provided prior to the course. Class material costs, based on 6 trainees, is estimated at \$170 per person.

Course Content

- Processing requirements
- Preparation of materials
- Exotic metals
- Material science
- Hands-on exercises

Course length: 7 1/2 days

CEU credits: 6.0

Fee: \$2899 for Steel

(add \$400 for Aluminum or Stainless Steel)



“ We have found the Corporate Training Group to be a strong partner in our efforts to provide up-to-date, relevant training to our employees. They have done a great job providing what we need, when we need it, at a reasonable cost. Everyone we have worked with has been friendly, knowledgeable, responsive and courteous. I highly recommend the Corporate Training Group and know I will continue to use their services.”

BILL HUBER

Director of Human Services
The Goodrich Corporation



ECONOMIC IMPACT

Overview Fact Sheet

Pueblo Community College plays a significant role in the local economy and is a sound investment from multiple perspectives. The community as a whole benefits from increased job and investment opportunities, higher business revenues, greater availability of public funds, and an eased tax burden. Students benefit from improved lifestyles and increased earnings. Finally, taxpayers benefit from a larger economy and lower social costs.

ECONOMIC GROWTH ANALYSIS

Total Effect

- The total annual impacts on the PCC Service Area sum to **\$170.5 million**.
- The total impact represents **1.9%** of the total regional economy and roughly **4,470** average wage jobs.

College Operations Effect

- The PCC Service Area economy annually receives **\$25.948 million** in income due to PCC operations. This is a conservative figure adjusted to account for monies that leave the economy or are withdrawn from the economy in support of the college.
- Added income attributable to the accumulation of PCC skills amounts to \$143.401 million each year.

Productivity Effect

- The PCC Service Area economy embodies an estimated **1.609 million** credits that have accumulated over the past 30-year period as thousands of former PCC students enter the workforce.
- PCC credits translate to higher earnings for students and increased output of businesses. The added income attributable to the accumulation of PCC credits in the workforce amounts to around **\$143.401 million** each year.

Student Spending Effect

- PCC estimates that approximately **9.7%** of its students come from outside the service area, bringing with them monies that would not have otherwise entered the local economy.
- The expenditures of PCC's non-local students generate roughly **\$1.1 million** in added income in the PCC Service Area each year.

INVESTMENT ANALYSIS

Student Perspective

- Throughout his or her working career, the average PCC student's discounted lifetime income increases by **\$3.20** for every dollar invested in PCC.
- Students enjoy a 11.5% rate of return on their investment in PCC.
- PCC served **13,649** students in the 2009-10 reporting year.
- Education increases lifetime income. The average income at the career midpoint of someone with an associate's degree in the PCC Service Area is **\$35,300**.

Taxpayer Perspective

- State and local governments allocated approximately **\$10.082 million** in support of PCC in FY 2009-10.
- For every dollar of this support, taxpayers see a cumulative return of **\$1.40** over the course of students' working careers (in the form of higher tax receipts and avoided costs).
- State and local governments see an annual rate of return of **5.0%** on their support for PCC. This return compares very favorably with private sector rates of return on similar long-term investments.

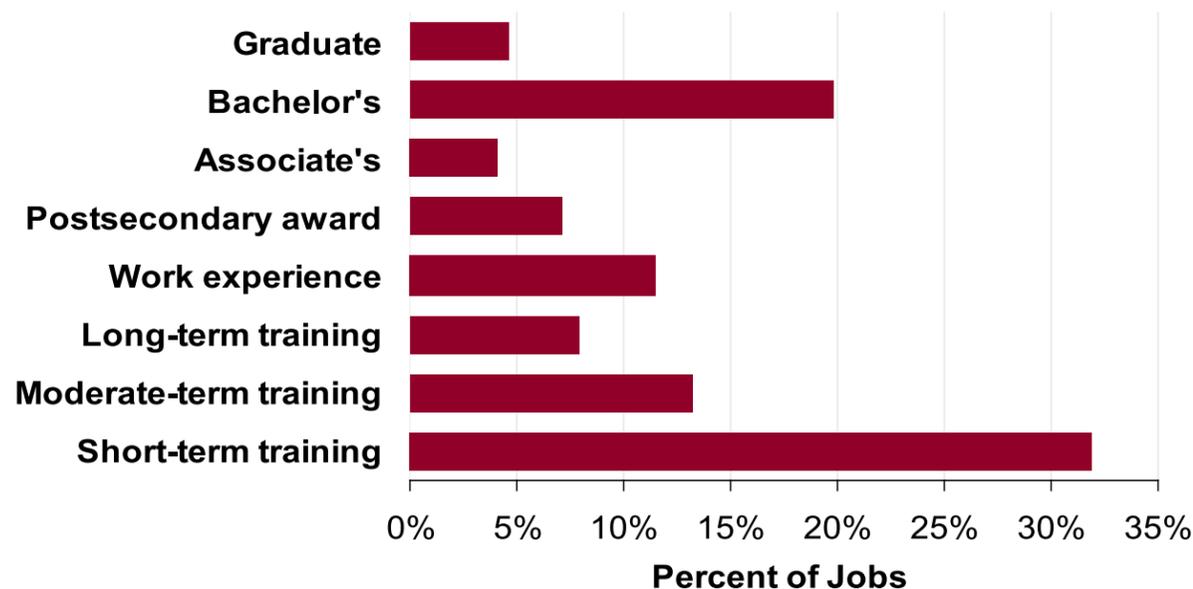
Social Perspective

- Higher earnings that accrue to PCC students and associated increases in state income expand the tax base in Colorado by about **\$26.024 million** each year.
- Colorado will see avoided social costs amounting to **\$1.999 million** per year due to improved health, reduced crime, and reduced welfare and unemployment.

PCC Creates a Skilled Workforce

- PCC activities encourage new business, assist existing business, and create long-term economic growth. The college enhances worker skills and provides customized training to local business and industry.
- An estimated 1.609 million PCC credits have accumulated in the PCC Service Area workforce over the past 30-year period as former PCC students (completers and non-completers) enter the regional workforce each year.

Projected 2021 Jobs by Skill Level in PCC Service Area (%)

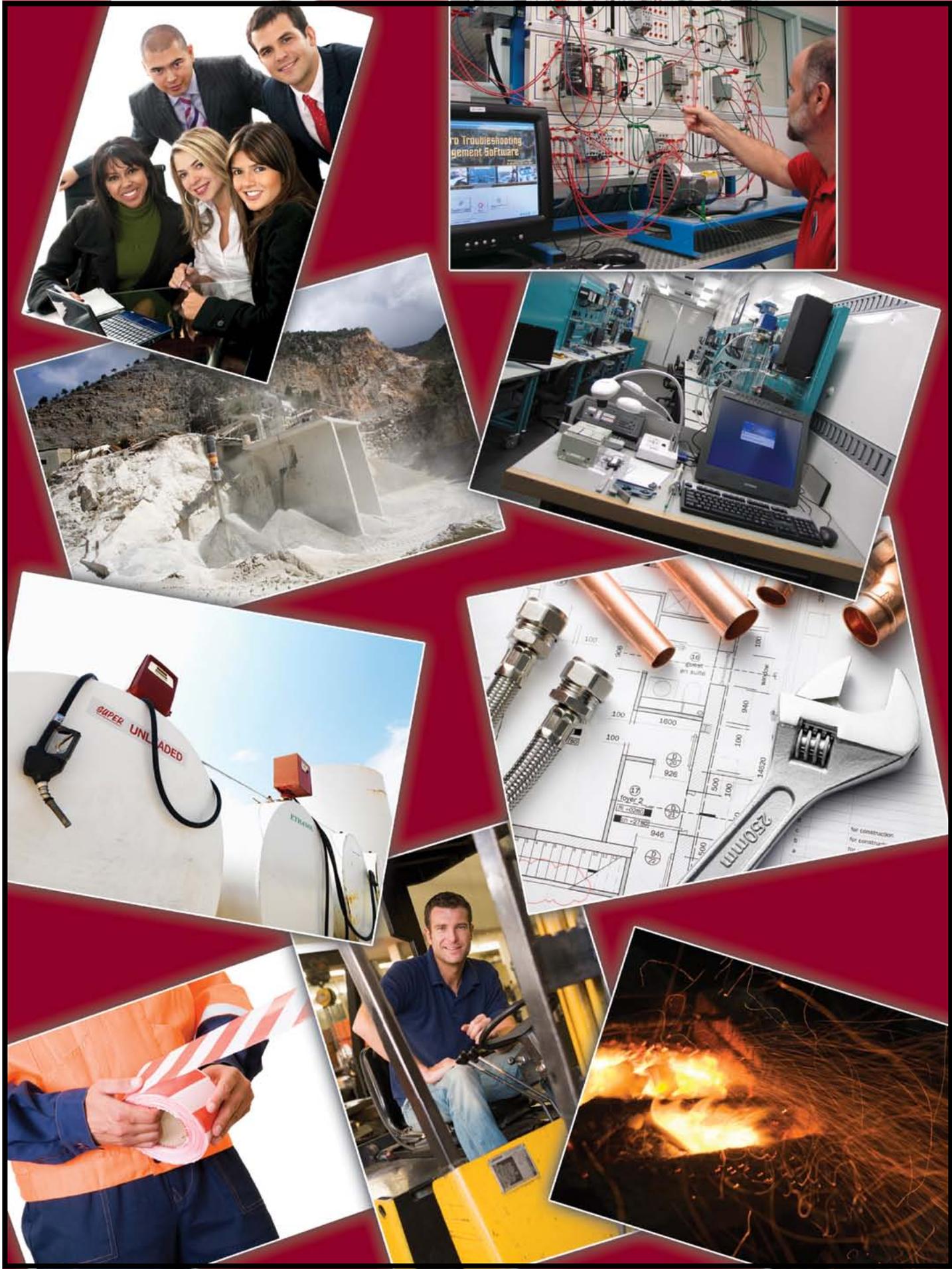


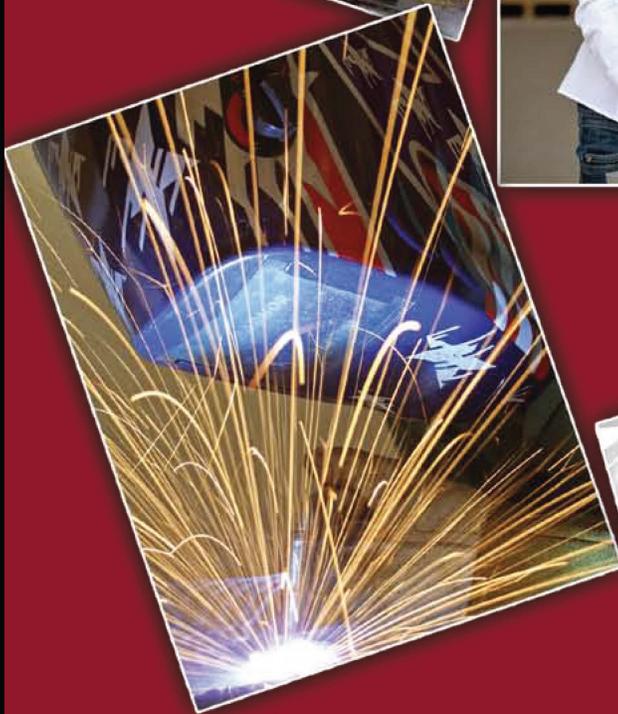
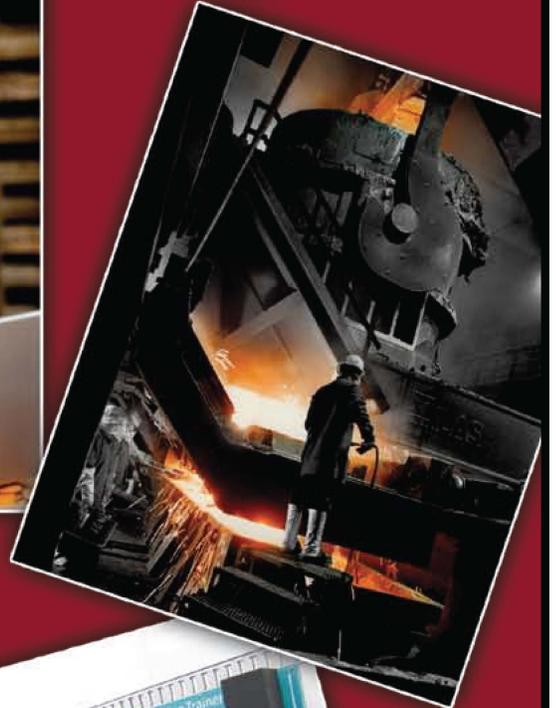
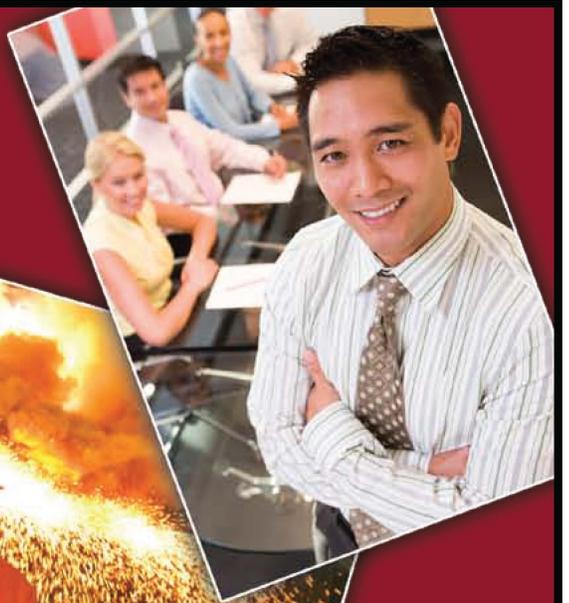
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Pueblo

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