

Course Descriptions

Precision Measuring & Mechanical Blueprint Reading

The participant will be introduced to manufacturing standards that are normally required on parts, components and assemblies with certain design specifications. Quality control, tolerances and linear dimensions will be discussed and reviewed and practical exercises will be required of each participant. Precision tools such as steel rules, Outside Vernier Micrometers, Calipers, both Vernier and Dial Calipers, Depth Micrometers will be used. Actual hands-on use of each of these tools will be included in this instruction and measurements will be taken down to one ten-thousandth of an inch (.0001") in English and measurements down to two-thousandths of a millimeter (.002m) will be required.

The students will also be introduced to Mechanical Print reading explaining the types of lines that are used on prints such as object lines, dimension lines, center lines, cutting plane lines, etc. Discussion of various types of prints including CAD Drawings, various drawing formats, scales, dimensioning, including the English System and Decimal Inch System, Metric System and tolerances used on Mechanical Prints will be included. Discussion will include Orthographic type drawings including front views, top views and side views and learning how to apply all multi-views to arrive at a finished product and the various symbols and abbreviations used on prints. In addition, thread forms, thread notes including internal threads, external threads, types of holes found on mechanical prints such as counterbore, countersink, various drill bit sizes including fractional, letter size and number size bits will be included.

Prerequisites: None

Team Building / Communications

Course Overview: Interaction Skills for Success

Improving people's interaction skills will improve the way your workforce thinks and acts. This course presents the basics on how to work well together, reduce wasted time, lessen conflict, and influence interactions in a positive way.

Course Overview: Working as a Team

Working as a Team clearly teaches employees the personal, interpersonal, and organizational advantages of working together, whether in teams or work groups.

Target Audience: All employees up to mid-level / upper-level leaders.

Facilitator Certification: DDI-certified facilitator

Prerequisites: Essentials of Leadership or Core Skills for Building Commitment.

Course Descriptions

Introduction to Lean

The Challenge of Lean Manufacturing: Transforming People, Work Processes, and Work Spaces.

This seminar opens with a brief overview of the origins of Lean Manufacturing. Following this, it focuses on the ways in which *beliefs*, *leadership styles*, and *work processes* impact the success of lean implementation initiatives. It offers a specific plan for optimizing the interplay of *beliefs*, *leadership styles*, and *work processes* in a way that will make a company's transition to lean successful. Finally, the seminar gives specific suggestions on how to use the 5S System as an ideal trigger for a transition to Lean. **Prerequisites:** None

Microsoft Windows

Students will learn basic computer concepts and skills related to IBM and compatible computers. Students will receive a thorough introduction to the domain environment. In addition, they will learn Windows 2000 techniques and become acquainted with applications.

This course provides a broad information base for students so that they have a greater awareness and confidence when using computers. Not only do students learn what the components are, but they also learn why they need to know this information and how it affects them in a practical way. This may enable students to participate in conversations, make appropriate requests, and troubleshoot problems related to personal computers.

Prerequisites: None

Basic Pneumatics

This course covers pneumatics power systems, basic pneumatic circuits, principles of pneumatic pressure and flow, pneumatic speed control circuit.

Prerequisites: None

Course Descriptions

PLC Classes

Introduction to RSLogix5™

This class is for the student who has previous experience with PLC-5 hardware and software such as AB6200 or ICOM, but no prior experience with the Allen-Bradley RSLogix5™ software. This class will provide a firm foundation in the primary functions of the software including creating and saving projects, going online using DH+ communications, editing ladder logic programs, configuring and displaying data tables, and using functions of the program such as search and forcing. The student will learn and practice skills on PLC-5 simulators loaded with the RSLogix 5™ software, using activities similar to those performed in the workplace.

Intermediate RSLogix5™

This course provides a thorough, hands-on familiarity with the Allen-Bradley RSLogix5 software. There are extensive exercises and opportunities for practice on PLC5 simulators.

Introduction to ControlLogix w/ RSLogix 5000™

This course provides a hands-on overview of the newer Allen-Bradley ControlLogix programmable controller hardware; and the RSLogix5000 Software. This class does not cover motion control instruction sets.

Intermediate ControlLogix w/ RSLogix 5000™

This course provides a thorough, hands-on familiarity with RSLogix5000 software and ControlLogix System. This course covers CLX programming and details that allow for optimal use of a ControlLogix system. This session begins with a review of a ControlLogix System which includes wiring, tagging/addressing and ControlLogix functionality. With extensive exercises and opportunities for practice this course includes advance troubleshooting tools and principles which will allow students to demonstrate troubleshooting ability. This class provides students with advance knowledge and concepts of, DH+, Ethernet & Remote I/O network's components and functionality as it relates to a ControlLogix system.

PLC5 Communications

This course covers the Communication networks and systems needed by PLCs. The in-depth course covers input and output communications, and PLC5 to PLC5 communications. Hardware and software configuration and connection for each type of communications is covered as well as basic troubleshooting items for each type of communications.

Course Descriptions

Ladder Logic Programming

This forty-hour course is for advanced users who want to be able to develop & create PLC-5 programs from scratch. Advanced troubleshooting features of the software and use of Advanced Instructions Sets are included as requested. There are extensive exercises and opportunities for practice on PLC-5 simulators. Actual company programs are used as examples when provided. This programming class uses the advanced features of the Allen-Bradley RSLogix5™ software as part of designing and modifying ladder logic programs.

Advanced Troubleshooting w/ PLC-5s

This course provides experienced participants with an opportunity to expand their troubleshooting skills with the more advanced and powerful features of PLC-5 software not covered in earlier courses. Extensive opportunities are provided for practice on PLC-5 simulators with complete PLC-5 software programs pre-loaded. It is strongly recommended that the participants provide their own sample programs to make this course most effective.

Prerequisites: The PLC Courses are listed in the order in which they need to be taken.

Course Descriptions

Engineering Drawing

This course uses a combination of instruments and CAD systems for making drawings. The course includes use of instruments, lettering, geometrical constructions, technical sketching, principles of orthographic projection, pictorial drawing, descriptive geometry, sectional views and conventions, auxiliary views and dimensioning.

Prerequisites: Previous drafting experience

Computer Aided Drafting & Design I

This course provides the student with knowledge and implementation of skills used in Computer Aided Drafting. Computer drawings will include geometric constructions, multiple views, sectional views, and dimensioning. Computer operations will include editing, filing and retrieving drawings to produce an industrial quality drawing using a plotter. **Prerequisites:** Engineering Drawing

Introduction to AutoCAD

This class is for the student who has previous experience working with drafting, but no prior experience in Computer Automated Drafting. Students will learn drawing setup, units, limits, layers, linetypes, and colors. They will also learn to use procedures and selected special features. **Prerequisites:** Previous drafting experience

Electrical Troubleshooting

This course will first emphasize the importance of safety and requirements when working with electricity. Using an electrical circuit design software we can duplicate prints of our clients or generate new ones and enter faults so that the student can troubleshoot the problem and repair it. **Prerequisites:** None

Course Descriptions

Lathe & Mill Operations and Safety

This course is designed to teach fundamentals machining operations on a Lathe and Mill. The course will emphasize general shop safety practices and machine operating procedures that are safe for the operators and other workers.

Prerequisites: None

CNC Programming – Computer Integrated Manufacturing

This course will include a brief summary of machine types and their application, basic CNC programming language and preparation of part programs. Students will program and operate three axis vertical mills with sequential and word address controls.

Prerequisites: Computer Solids Modeling or Intro to Engineering Design

Shop Math

This lesson is a general overview of the *Shop Math* course. Covered are common math symbols, estimating answers, and calculator review.

- **Common Fractions:** Participants will learn to identify the properties of fractions to reduce/raise fractions to lower/higher terms; convert whole numbers to fractions; add, subtract, multiply and divide fractions.
- **Reading Scales:** Participants will learn some fractions applications (radius, diameter); how to read any scale and a ruler, the U. S. Measuring system; and how to convert fractions and mixed numbers to decimals and vice versa.
- **Decimals:** Participants will learn to compare decimal values, and to add, subtract, multiply and divide decimals. Applications include rounding techniques, calculating a tolerance range and determining those values that fall within the range.
- **Percentages:** Participants will learn to calculate percentages, to convert percentages to decimals, and to use a simple formula for calculating unknowns in any percentage problem.
- **Calculators:** The course is designed to be used with calculators. If workers have access to calculators as part of their normal working environment, calculators are also appropriate in the classroom. If they do not usually have access to calculators in their work, it may be decided that they also should not be used in the classroom. Not using calculators will extend the length of the course, since additional time is necessary when participants must work the exercises.
- **Prerequisites:** None