## Industrial Safety

*16 hours of instruction*

**First Aid/CPR (7 hours)** - This course teaches trainees to effectively recognize and treat adult emergencies in the critical time until EMS personnel arrives. This program provides a complete health and safety training solution for first aid, adult CPR and AED. Anyone can take and succeed in this program. This program meets and exceeds the requirement under OSHA regulations for workplace safety/first aid.

**ToolingU - SME**
- **Lock Out/Tag Out Procedures 141 (1.5 Hours)**
- **Intro to OSHO 101 (1.5 Hours)**
- **Ergonomics 102 (1.5 Hours)**
- **Personal Protective Equipment 111 (1.5 Hours)**
- **Machine Guarding 140 (1.5 Hours)**
- **Safety for Metal Cutting 101 (1.5 Hours)**

## Job Skills

*4.5 hours of instruction*

**ToolingU - SME**
- **Essentials of Communications 120 (1.5 Hours)**
- **5S Overview 151 (1.5 Hours)**
- **Quality and Customer Service 175 (1.5 Hours)**

## Foundations in Manufacturing

*36 hours of instruction*

**Math Training (8 Hours) -** This introductory course is designed for trainees who have basic math skills or for those who need a review of basic math concepts. The primary goal of this course is to help individuals aqcuire a solid foundation in the basic skills of math including arithmetic, fractions, decimals, percents, english and metric conversions, basic algebra, trigonometry and geometry. This course shall show how these skills can model and solve authentic real world problems.

**Blueprint Reading (12 Hours) -** This course provides a basic understanding of blueprints and the practical application of blueprint reading to streamline work. On-hand shop measuring equipment will be used during workshops to reinforce learning.

**Problem Solving (8 Hours) -** This workshop demonstrates how to use available tools to solve problems in the office and on the manufacturing floor. Participants will learn how the tools are structured to improve and understand a process and how to prepare the Project Charter, SIPOC (Suppliers, Inputs, Process, Outputs, Customer), Process Map, Cause & Effect Diagrams and Matrices and FMEA (Failure Mode and Effect Analysis).

### -OR-

**Catalyst Connection | Problem Solving (8 Hours) -** Many companies seek to improve their business using various continuous improvement methodologies including Lean principles. The proven method for deploying these concepts is to tie them into an overall strategy of business improvement. This leads to the highest rate of return on investment over the long term along with ensuring sustainabiity of a continous improvement culture. As part of this overall strategy of continuous improvement is the use of the tool: Practical Problem Solving. ***This course option will take place on-site at Catalyst Connection***

# Foundations in Manufacturing (continued)
## 36 hours of instruction

**Catalyst Connection | Principles of Lean Manufacturing (8 Hours) -** The Lean Manufacturing Training continues to be a key componenet for companies seeking a culture of continuous improvement. This introductory course provides participants with the foundational knowledge of Lean Manufacturing tools and concepts. The Lean Manufacturing Training combines both a classroom setting with hands-on simulation which gives the participants the opportunity to see the benefits of the lean concepts. ***This course will take place on-site at *Catalyst Connection*****

# Technical Expertise
## 240 hours of instruction

**Computer Training (8 Hours) -** This course is for those who need assistance operating a computer. Participants will be introduced to the basics of using a computer, along with how to start and use a software program. Participants will experience working within a windows environment, file management, using Word software to create documents and Excel software to create simle spreadsheets.

**PLC Training (30 Hours) -** This course develops knowledge and skills in programmable logic controllers. Beginning with an introduction to the ladder logic programming at the basis of PLCs, the course goes through interfacing both digital and analog input and output techniques, event sequencing, motor control, and counter/timer applications. Hands-on will be done in the Intergrated Systems Technology PLC shop on Allen Bradley PLC 5 equipment

**Electrical Training (30 Hours) -** This course provides information on industrial control circuts, safety, voltage, current | AC & DC, resistance and circuit protection methods. Safety topics will be stressed.

**Hydraulics Training (32 Hours) -** This course provides practical skills training for employees to maintain common piping systems used in modern manufacturing environments. Topics include: *Hydraulic pump classifications*; *Positive dispalcement pump types and their components*; *Pump safety and operation*; *Principles of flow*; *Pump performance*; and *Power and Efficiency*.

**Mechanical Training (80 Hours) -** This course will explore mechanical industrial maintenance topics in mechanical drives including mechanical drive systems, fasteners, power transmission systems, light and heavy duty v-belt and chain drive power transmission equipment. Additionally, principles of friction and methods to overcome friction will be studied including bearings, gears, bushings and breaks and clutches.

**Robotics Training (60 Hours) -** This course introduces students to programming and application of industrial robots. Topics include: *Basic robot operation and programming*; *The application of electrical and mechanical principles to standards-based automated control*; and *The development of robot work cells*. This course has been vetted by the Mid-Atlantic Mechatronics Advisory Council (MAMAC). Students will gain knowledge and practice hands-on skills in the Integrated Systems Technology Center.