

Juran's e-Learning Services

Juran's Lean and Six Sigma and related e-learning courses are designed to help individuals become familiar with and practice the tools used in a Lean and Six Sigma initiative. The training helps to get improvement projects started quickly and keep Belts and projects on track with less on-site days to save on travel.

Juran's e-learning modules are designed with stimulating interaction, confidence-boosting self-tests, contemporary design, intuitive interfaces, toolkits, mapping and student guides all ensure that your students learn as much as twice as fast. Common examples that are easy for anyone to relate to are used to illustrate concepts. Interactive quizzes are included at the end of each new concept to reinforce learning throughout the module. Pre and posts tests allow students to gauge their learning level.

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Lean Six Sigma

Lean Six Sigma Fusion

The integration of Lean and Six Sigma is explored in this 40 minute module. This integration guided by the deployment history of a company. Three approaches of combining the Six Sigma and Lean methodologies are described. These include: 1) Six Sigma Approach to Lean with DMAIC as the primary framework for an emphasis on process effectiveness; 2) Lean Approach to Six Sigma with system efficiency as the primary driver; and 3) the balanced approach of a Lean Six Sigma Blend.

Lean Six Sigma Awareness

This 2 1/2-hour program is designed to provide the learner with an overview of the Lean and Six Sigma methodologies, as well as present the foundations of process improvement and introduce the learner to some of the tools used. The modules include:

- Six Sigma Awareness Introduction and Toolkit
- Intro to Lean or
- Intro to Lean Office (Transactional)

Lean Six Sigma Yellow Belt

Yellow Belts receive training that enables them to be productive team members and support Green Belt and Black Belt projects. Yellow Belt advances the learner beyond Awareness. It enables the learner to gather data, participate in Lean and Six Sigma activities and sustain the gains resulting from projects. The 10-hour online self-study program includes the *Awareness program* above plus:

- Understanding Data (Define)
- Pareto Analysis (Tool)
- Calculating Process Based Costs (Measure)
- Introduction to Process Mapping (Tool)
- Cause and Effect Diagrams
- Eight Wastes
- 5S

Upon completion of this program, participants will be able to:

- Learn how key initiatives like value stream mapping, Kaizen Events, standard work, continuous flow, 5S, Total Productive Maintenance, and mistake proofing can help your operation produce product more efficiently.

- Understand the benefits of a Lean Six Sigma implementation.
- Use the methodology to achieve the stated goals.
- Calculate metrics including DPMO, Sigma Quality Level, defect rate, specification limits and standard deviation.
- Examine the roles and responsibilities for people in the Lean Six Sigma support infrastructure as well as for each employee.
- Identify basic terms used in statistics.
- Construct pie charts, bar graphs, Pareto charts, and histograms.

Lean Six Sigma Green Belt Basics

This offering provides all of the information and modules in the Yellow Belt program, plus more detail on the Analyze, Improve and Control phases, Lean tools, and training in statistics and process capability. The 30-hour online self-study program includes the *Awareness program* plus these interactive modules:

- Understanding Data
- Pareto Analysis
- Calculating Process-based Costs
- Introduction to Process Mapping
- Current State Mapping
- Future State Mapping
- Cause and Effect Analysis
- What Is Statistics?
- Measures of Dispersion
- Organizing Data
- Measures of Central Tendency
- Descriptive Statistics: Self Assessment
- Intro to Minitab
- Introduction to Process Capability
- Introduction to Probability
- Validating the Measurement System
- Failure Mode and Effect Analysis
- Control Plans and Control Charts
- Types of Control Charts

- Scatter Diagrams
- Kaizen Events
- Current State Mapping
- Future State Mapping
- Visual Management
- Maximizing ROI
- Sustaining ROI
- Extending ROI

Upon completion of this program, participants will be able to:

- Learn how key initiatives like value stream mapping, Kaizen Events, standard work, continuous flow, 5S, Total Productive Maintenance, and mistake proofing can help your operation produce product more efficiently.
- Develop a Project Charter including writing the problem you need to solve and goal you need to attain and use appropriate tools to solve the problem and reach the goal.
- Use the tools taught at the appropriate times and interpret the results.
- Identify basic terms used in statistics.
- Calculate some numerical measures of central tendency such as the mean, median and mode.
- Identify measures of dispersion such as the range and standard deviation.
- Estimate percentage of measurements within a symmetrical interval about the mean.
- Determine when a process is meeting customer requirements given technically accurate and appropriate information about customer requirements.
- Practice the principles of the Eight Wastes and the difference between Value Add and Non-Value Add activities.
- Know the benefits of implementing a control plan.
- Identify value streams within operations and what factors to consider when selecting a value stream for improvement
- Practice steps to create a current state value stream map and how to calculate takt time and evaluate versus cycle time
- Use SPC control charts to discriminate between stable processes in control from those out of control where corrective action must be taken.

Lean Six Sigma Blended Black Belt Training

Training consists of classroom training sessions. These training sessions span approximately twelve weeks. Classroom session topics are supported and enhanced by assigned e-Learning modules (50 hours of online self-study).

This training will enable members to lead Black Belt level project teams. Trained Black Belts have an in-depth understanding of the Lean Six Sigma philosophy, theory, strategy, tactics, and quality management tools. They are managerial level or technical specialists assigned full-time responsibility to implement Lean Six Sigma, multi-functional improvement projects within a business unit. They develop, coach, and lead cross-functional Lean Six Sigma Improvement teams. Black Belts also use, teach, and distribute tools and methods to Green Belts and team members. Participants will learn the methodology, when and how to use the appropriate tools and statistics to improve the overall efficiency and effectiveness of the organization, along with project selection, deployment, and change management. Contact Juran at 800-338-7726 or through email at info@juran.com to enroll in this workshop.

The 50-hour online self-study support for the Lean Six Sigma Black Belt workshop includes:

- Understanding Data
- Pareto Analysis
- Calculating Process-based Costs
- Introduction to Process Mapping
- Current State Mapping
- Future State Mapping
- Cause and Effect Diagrams
- Intro to Minitab
- What Is Statistics?
- Measures of Dispersion
- Organizing Data
- Measures of Central Tendency
- Descriptive Statistics: Self-Assessment
- Introduction to Process Capability
- Process Capability Assessments
- 5S/6S
- Eight Wastes
- Visual Management
- Standard Work

- Workplace Design
- Flow & Pull Systems
- Kaizen Event
- An Introduction to Probability
- Process Distribution: Discrete Random Variables
- Validating the Measurement System
- Failure Mode and Effect Analysis
- Introduction to Inferential Statistics
- Making Inferences About Proportions
- Comparing Means
- Confidence Interval for the Mean
- Hypothesis Tests for the mean
- Making Inferences about Variances
- Simple Linear Regression
- ANOVA
- Scatter Diagrams
- Maximizing ROI
- Sustaining ROI
- Control Plans and Control Charts
- Types of Control Charts
- Extending ROI

Upon completion of this program, participants will be able to:

- Achieve the objectives listed for the Yellow and Green Belt programs.
- Identify the appropriate form of a statistical hypothesis for testing a population mean given specific information about a business problem.
- Identify the appropriate steps in conducting a hypothesis test for a single population mean or compare two population means.
- Interpret the meaning of the confidence interval for a single population mean.
- Conduct the appropriate hypothesis test for a single population proportion or compare two population proportions.
- Interpret the results and draw valid statistical conclusions.
- Determine the appropriate degrees of freedom and how to calculate the F values for one-way, two-way and nested designs.

- Use simple linear regression and perform predictions based upon the model.

Lean Value Stream Management Curriculum Online

Intro to Lean

A Lean operation produces just what is needed, when it is needed with no additional labor, costs, inventory, or time. Learn the skills necessary to apply Lean techniques to reduce waste and improve process efficiency. Gain a practical understanding of Lean continuous improvement techniques and how to reduce inventory, errors, and production lead time. Understand how to start the Lean Journey and apply Lean techniques to reduce waste. Learn how key initiatives like value stream mapping, Kaizen Events, standard work, continuous flow, 5S, Total Productive Maintenance, and mistake proofing can help your operation produce product more efficiently.

Intro to Lean Office (Transactional)

A lean office produces just what is needed, when it is needed with no additional labor, costs or time. Office waste is not as easy to see, so it's harder to find! Stacks of physical inventory are far more obvious than email inboxes at full capacity.

- Learn the skills necessary to apply Lean techniques to reduce waste and improve process efficiency in the office environment.
- Gain a practical understanding of Lean continuous improvement techniques and how to reduce paperwork, errors, and processing time.
- Understand how to start the Lean journey in your office, and how key initiatives like value stream mapping, Kaizen, standard work, continuous flow, 5S, and mistake proofing can help your office operate more efficiently.

Eight Wastes

Producing anything that the customer doesn't want or need is waste. It lowers your profits. It leaves you less competitive in your market. This course teaches the principles of the Eight Wastes and the difference between Value Add and Non-Value Add activities. The eight wastes are described with examples to help the participant see the waste that is hidden, or taken for granted, in both manufacturing and office environments. Utilizing Lean techniques can help to dramatically reduce these wastes and their associated costs.

Standard Work

Standard Work is an essential building block of a Lean Enterprise. Standard Work helps ensure that each step in the process is clearly defined so that work can be performed repeatedly in the same manner. Variations in processes result in mistakes or other quality problems that require inspection, rework, and scrap. Learn how Standard Work can benefit any process by:

- Stabilizing work activities from hour to hour, person to person, and area to area
- Clarifying roles, responsibilities, and expectations
- Helping to control “noise” or variation in the process
- Aiding in rapid root cause identification
- Creating the basis for excellence in Quality, Safety, Cost, and Delivery

5S/6S

5S/6S is a technique that results in a workplace that is clean, uncluttered, safe and well organized. The 5S/6S pillars, Sort (Seiri), Set in Order (Seiton), Shine (Seiso), Standardize (Seiketsu), Sustain (Shitsuke), and Safety provide a methodology for organizing, cleaning, developing, and sustaining a productive and safe work environment. A 6S environment has “a place for everything and everything in its place,” with all tools and materials ready where and when they are needed. Learn how 6S can help reduce waste and optimize productivity in any work environment.

Current State Value Stream Mapping

The current state value stream mapping is a graphical and analytical depiction of current state of the process for a specific value stream. Understanding the current state is a critical first step to evaluating and improving the flow of value to the customer. In this course participants will learn:

- the importance of identifying value streams within operations
- factors to consider when selecting a value stream for improvement
- steps to create a current state value stream map
- how to calculate takt time and evaluate versus cycle time

Future State Value Stream Mapping

The future state value stream mapping is a graphical and analytical depiction of the lean transformation process for a specific value stream. In this course participants will learn how to analyze the current state map and develop a future state map that identifies improvements to be made to the value stream. Participants will learn how to evaluate takt time versus cycle time, enable and connect process flow, implement pull, and to identify waste for elimination.

Visual Management

Visual Management is the establishment of a workplace where performance conditions can be understood by sight such that:

- Problem areas are highlighted in order to...

- Expose waste in the process to...
- Take action and eliminate waste!

Learn how visual displays and controls help keep processes running as efficiently as they were designed to run. One of the most important benefits of a visual workplace is that even someone unfamiliar with the process can, within a matter of minutes, know what is happening, identify errors, and can tell if anything is out of place or missing.

Error Proofing

Error Proofing is one of the Lean tools used to ensure products and processes are completed correctly the first time. The goal of error proofing is to prevent the occurrence of defects and to ensure that mistakes are detected when they occur. Because people can make mistakes even in inspection, error proofing often relies on mechanisms built into tools or systems that automatically signal when problems occur or prevent the process from continuing until the proper conditions are met.

- The benefits of error proofing are:
 - Improved process throughput and quality
 - Reduced defect and rework rates
- Error Proofing is also known as:
 - Mistake proofing
 - Poka Yoke

Changeover Reduction

Changeover reduction is one of the fundamental techniques in lean manufacturing and a key enabler to waste reduction. Changeover is defined as the time required from the unloading or completion of the last good part until the production of the first good part of the next run. Reducing changeover time enables production in smaller, more frequent batches, which has the following advantages:

- Level production flow and output
- Elimination of waste and non-value added activities
- Improved manufacturing flexibility
- Reduced inventory and lead time

Changeover reduction may also be referred to as:

- Setup reduction
- Quick Changeover
- Single Minute Exchange of Dies (SMED)

Workplace Design

Creating high performance work spaces or manufacturing cells involves much more than moving machines and people closer together. Well designed work places eliminate waste and help to optimize material, people, and information flow. The work flows in alignment with value streams rather than according to functional teams or departments.

The key to optimizing material, people, and information flow is to insist on “one piece,” or continuous flow and the co-location of process steps in the value stream. Make one complete part at a time, or pass completed work to the next process step only when that process is ready for it. Locate the value stream processes together to increase communication between the process steps, which enables early error detection and rapid resolution.

Well-designed work areas enable visual management techniques. At a glance it is apparent which product is being produced, whether incoming parts or supplies need to be replenished, and whether any trouble spots exist. Good visual indicators enable information flow and support continuous process improvement.

Flow and Pull Systems

The concept of “Pull” in a Lean office or factory means to respond to the pull, or demand, of the customer. Lean companies design their operations and processes to respond to the ever-changing requirements of customers. Learn how pull systems:

- Control the flow of work through the factory or office based on customer demand
- Reduce or eliminate the need for large batches of work, complex scheduling systems, and inaccurate forecasts
- Eliminate waste in handling and storing product the customer has not ordered
- Help simplify the delivery of product to the customer

Kaizen Event

Kaizen Events are highly effective team events that focus on achieving rapid results. Kaizen teams use various analytical and Lean techniques, such as Value Stream Mapping, Changeover Reduction, 5S, Total Productive Maintenance, and Workplace Design to implement rapid improvements. In this course, participants will learn how to leverage this powerful and disciplined approach to execute improvement projects in a one week Kaizen Event. Participants will learn how to prepare for a successful event, build a winning Kaizen team, plan and manage the event week, and how to follow up and close the event to ensure success.

Total Productive Maintenance

Total Productive Maintenance (TPM) is a team and shop floor based initiative focused on optimizing the effectiveness of manufacturing equipment. Maintenance departments are traditionally the center of preventive maintenance programs; TPM seeks to train and focus workers to take care of the equipment and machines with which they work.

TPM focuses on preventing breakdowns (preventive maintenance), making maintenance easier (corrective maintenance), designing and installing equipment that needs little or no maintenance (maintenance prevention), and quickly repairing equipment after breakdowns occur (breakdown maintenance).

Learn how TPM improves operations by:

- Preventing equipment breakdowns
- Prevention of product defects and rejects
- Improving equipment effectiveness and efficiency
- Involving and training operators in equipment maintenance and basic repair
- Improving equipment to minimize maintenance and/or make the maintenance or repair easier and less time consuming
- Reducing costs, including reducing money and space tied up with spare parts inventory

Problem Solving

Juran's Problem-Solving Process and Tools

Juran's Problem-Solving Process & Tools prepares participants to better understand the problem-solving process and tools that are the heart of effective Root Cause Analysis, Quality Improvement and Six Sigma DMAIC. It is used to improve customer satisfaction, reduce costs, and determine the root causes of process problems!

This 9 hour program begins by introducing the basics of problem solving. The balance of the modules examine the data collection process and each of the improvement tools including Pareto Diagrams, Process Maps, Cause-Effect Diagrams, Scatter Diagrams, Histograms, and multiple Graphs and Charts including Control Charts.

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

- Define breakthroughs in improvement.
- Define the steps of effective problem solving.
- Know when to use each of the most common tools use to solve most problems.
- Practice using the tools to achieve root cause analysis.

Quality Tools

Cause-Effect Diagram

This course focuses on the correct usage of a cause-effect diagram and illustrates how to develop it.

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

- Construct a Cause and Effect Diagram.
- Use a Cause and Effect Diagram to identify and organize potential root causes.
- Conduct effective brainstorming sessions

Failure Mode & Effect Analysis (FMEA)

This course focuses on the set-up and correct usage of an FMEA and illustrates how to develop it.

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

- How to construct an FMEA.
- Using hypothesis testing to verify assumptions.
- Given a null and alternative hypothesis, using statistics to reliably draw conclusions with sample data.

Pareto Analysis

This course focuses on how to create and the correct usage of Pareto diagrams for analysis.

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

- How to create a Pareto Chart, including a cumulative relative frequency line.
- Using a variable to weight the original data and produce another Pareto Chart.
- Using stratification methods to perform in depth Pareto analysis of the data.
- Pareto Chart interpretation.

Control Plans and Control Charts

This course focuses on the importance of control and the tools that are used.

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

- Apply basic control usage rules.

- Identify when to use the appropriate control chart.
- Identify the steps involved in setting up the control chart.
- Apply the criteria of a control plan.
- Understand the data and categories needed for a successful plan

Introduction to Process Mapping

Using two examples of driving to a specific destination and billing customers, this course explores and illustrates the levels of process mapping or flow charting.

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

- Create Level 1, 2 and 3 process maps.
- Know what questions addressed from effective process mapping.
- Know how to use the process map to understand the “as is” process and use it to brainstorm where problems might occur

Six Sigma Curriculum Online

Juran offers online Six Sigma programs in Awareness, Yellow Belt, and Green Belt. For Black Belt training, Juran offers onsite and public workshops that include access to a knowledge base of online modules, project coaching and certification.

Six Sigma Introduction and Toolkit

This 2-hour program is designed to provide the learner with an overview of Six Sigma as well as present the foundations of the DMAIC methodology for process improvement and introduce the learner to some of the tools used. The Toolkit presents many of the tools used in a Six Sigma project, providing a definition, an example, and “how to” information.

Upon completion of this program, learners will be able to:

- Understand the benefits of a Six Sigma implementation and why Six Sigma works in contrast to other quality improvement programs.
- Use a structured approach to Six Sigma project selection.
- Use the DMAIC process on the job to achieve the stated goals.
- Calculate Six Sigma metrics including DPMO, Sigma Quality Level, defect rate, specification limits and standard deviation.
- Examine the roles and responsibilities for people in the Six Sigma support infrastructure as well as for each employee.
- Understand how each individual employee's support can help achieve results.

Six Sigma Yellow Belt

Yellow Belts receive training that enables them to be productive team members and support Green Belt and Black Belt projects. Yellow Belt advances the learner beyond the Introduction. It enables the learner to gather data, participate in process mapping and sustain the gains resulting from Six Sigma projects. The 8-hour online self-study program includes *Six Sigma Introduction and ToolKit* plus:

- Understanding Data (Define)
- Pareto Analysis (Tool)
- Calculating Process Based Costs (Measure)
- Introduction to Process Mapping (Tool)
- Cause and Effect Diagrams

Upon completion of this program, participants will be able to:

- Understand the benefits of a Six Sigma implementation and why Six Sigma works in contrast to other quality improvement programs.
- Use the methodology to achieve the stated goals.
- Calculate Six Sigma metrics including DPMO, Sigma Quality Level, defect rate, specification limits and standard deviation.
- Examine the roles and responsibilities for people in the Six Sigma support infrastructure as well as for each employee.
- Identify basic terms used in statistics.
- Classify variables as quantitative or qualitative.
- Practice graphical techniques for representing both Qualitative and Quantitative data.
- Construct pie charts, bar graphs, Pareto charts, and histograms.

Six Sigma Green Belt Basics

This offering provides all of the information and modules in the Yellow Belt program, plus more detail on the Analyze, Improve and Control phases, and training in statistics and process capability. The 22-hour online self-study program includes reading from Juran's Classroom Workbook published in the portal as Adobe Acrobat Reader files plus these interactive modules:

- Pareto Analysis
- Calculating Process-based Costs
- Introduction to Process Mapping
- Understanding Data
- Cause and Effect Analysis
- What Is Statistics?
- Measures of Dispersion
- Organizing Data
- Measures of Central Tendency
- Descriptive Statistics: Self Assessment
- Intro to Minitab
- Introduction to Process Capability
- Introduction to Probability
- Validating the Measurement System
- Failure Mode and Effect Analysis
- Control Plans and Control Charts

- Types of Control Charts
- Scatter Diagrams
- Maximizing ROI
- Sustaining ROI
- Extending ROI

Upon completion of this program, participants will be able to:

- Achieve the objectives listed for the Yellow Belt program.
- Develop a Project Charter including writing the problem you need to solve and goal you need to attain and use appropriate tools to solve the problem and reach the goal.
- Use the tools taught at the appropriate times and interpret the results.
- Identify basic terms used in statistics.
- Calculate some numerical measures of central tendency such as the mean, median and mode.
- Identify measures of dispersion such as the range and standard deviation.
- Estimate percentage of measurements within a symmetrical interval about the mean.
- Calculate the Z score for a stated measurement.
- Calculate the probability of other defined events given two or more simple events and the relationships between them.
- Determine when a process is meeting customer requirements given technically accurate and appropriate information about customer requirements.
- Know the benefits of implementing a control plan.
- Read and understand a SPC control chart.
- Use SPC control charts to discriminate between stable processes in control from those out of control where corrective action must be taken.

Green Belt Online Certification

This program includes self-study through online courses and reading guides that capture the sub-steps of the DMAIC process and checkpoints for completion of each phase. In addition to the online modules, our certification program can be purchased. As part of that program, we will supply you with our Final Report Requirements documents listing the necessary deliverables; and our Storyboard Template, your project reporting tool to help you prepare for the oral defense of your project.

Upon completion of the training you will schedule a final certification exam, and you will continue with Juran's Online Green Belt Certification by successfully completing a project that has been sanctioned by your upper management. The certification requirements include:

1. Successfully complete Green Belt training.
2. Pass the exam with a score of 75 or higher.
3. Successfully complete a Six Sigma project that was carried out during the course of the training (successful completion is defined as "using the Six Sigma methodology to correctly achieve operational and financial objectives").
4. Submit a final project report (e-copy) to Juran Institute by following the Final Report Requirements and using the Juran Storyboard Board template.
5. Defend the project orally (the candidate presents his/her project and answers questions posted by a Juran Master Black Belt).

Additional virtual project coaching is available in hourly increments.

Six Sigma Blended Black Belt Training

Training consists of twelve classroom training sessions. These training sessions span approximately twelve weeks. Classroom session topics are supported and enhanced by assigned e-Learning modules (40 hours of online self-study).

This training will enable members to lead Black Belt level project teams. Trained Black Belts have an in-depth understanding of the Six Sigma philosophy, theory, strategy, tactics, and quality management tools. They are managerial level or technical specialists assigned full-time responsibility to implement Six Sigma, multi-functional improvement projects within a business unit. They develop, coach, and lead cross-functional Six Sigma Improvement (DMAIC) teams. Black Belts also use, teach, and distribute Six Sigma tools and methods to Green Belts and team members. Participants will learn the Six Sigma DMAIC methodology, when and how to use the appropriate tools and statistics to improve the overall efficiency and effectiveness of the organization, along with project selection, deployment, and change management. Class size is not to exceed twenty participants.

The 40-hour online self-study program includes:

- Pareto Analysis
- Calculating Process-based Costs
- Introduction to Process Mapping
- Understanding Data
- Cause and Effect Analysis
- Intro to Minitab
- What Is Statistics?
- Measures of Dispersion
- Organizing Data

- Measures of Central Tendency
- Descriptive Statistics: Self-Assessment
- Introduction to Process Capability
- Process Capability Assessments
- An Introduction to Probability
- Process Distribution: Discrete Random Variables
- Validating the Measurement System
- Failure Mode and Effect Analysis
- Introduction to Inferential Statistics
- Making Inferences About Proportions
- Comparing Means
- Confidence Interval for the Mean
- Hypothesis Tests for the mean
- Making Inferences about Variances
- Simple Linear Regression
- ANOVA
- Scatter Diagrams
- Maximizing ROI
- Sustaining ROI
- Control Plans and Control Charts
- Types of Control Charts
- Extending ROI

Upon completion of this program, participants will be able to:

- Achieve the objectives listed for the Yellow and Green Belt programs.
- Identify the appropriate form of a statistical hypothesis for testing a population mean given specific information about a business problem.
- Identify the appropriate steps in conducting a hypothesis test for a single population mean or compare two population means.
- Interpret the meaning of the confidence interval for a single population mean.
- Conduct the appropriate hypothesis test for a single population proportion or compare two population proportions.
- Interpret the results and draw valid statistical conclusions.

- Determine the appropriate degrees of freedom and how to calculate the F values for one-way, two-way and nested designs.
- Use simple linear regression and perform predictions based upon the model.

Statistics and Statistical Tools

Basic Statistics

The application of statistical techniques to solve business related problems has become more popular in recent years with the availability of computers and associated software packages. This module will introduce the participant to the basic terminology used in statistics.

Topics include:

- What are Statistics?
- Organization of Data
- Measures of Central Tendency
- Measures of Dispersion
- Descriptive Statistics: Self Assessment

Upon completion of this program, participants will be able to:

- Identify basic terms used in statistics.
- Classify variables as quantitative or qualitative.
- Understand the difference between using descriptive and inferential statistics.
- Practice graphical techniques for representing both Qualitative and Quantitative data.
- Construct frequency distributions, pie charts, bar graphs, Pareto charts, histograms, cumulative frequency distribution, and stem-and-leaf plots.
- Calculate or identify the three measures of central tendency: mean, median and mode.
- Estimate the relationship of the median and the mean based upon the shape of a histogram.
- Identify changes in the mean, median and mode based upon a transformation made to the original data.

Introduction to Process Capability

This course is designed to teach that a measure of process capability can help determine how well a process is able to meet customer requirements. It explores and illustrates the concepts of a stable process and specifications.

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

- Identify when one process is more capable than another given hypothetical capability diagrams

- Distinguish in a diagram a capable from non-capable processes.
- Identify how sample measurements are used to estimate population values from relevant information about populations
- Determine when a process is meeting customer requirements when given technically accurate and appropriate information about customer requirements

Introduction to Inferential Statistics

This course teaches inferential statistics, a branch of statistics that allows us to make estimates, decisions, and other generalizations about a population by using sample data. When proper sampling procedures are used and followed, a measure of reliability in the estimate can be calculated. It is strongly suggested that the Basic Statistics program be completed before taking this course.

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

- Distinguish between the use of descriptive and inferential statistics
- Use the results drawn from samples to estimate population parameters
- Understand the concepts of confidence intervals and hypothesis testing
- Explain the concept of using a confidence interval to estimate a population parameter

Identify when hypothesis testing may be appropriate and explain the methodology as it relates to the scenario presented.