QUALPRO®

QualPro Seminar Catalog

865-927-0491

www.qualproinc.com

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Essential Statistical Quality Improvement Techniques

This four-day seminar teaches the basic techniques of statistical quality control and provides training in QualPro's continuous improvement methods. The traditional techniques for quality improvement were originally designed for the manufacturing industry but readily lend themselves to applications in many other processes.

The content presented in this basic seminar is applicable across numerous industries. Additionally, this seminar features class exercises specific to attendees' industries. Theory and technical details are minimal. The course emphasizes the use of simple techniques to produce demonstrable results.

Participants should include: managers, process engineers, product engineers, test engineers, statisticians, and foremen. Participants should also include personnel in quality control or quality assurance, patient care, clinical procedures, administrative functions, accounting, training, data processing, administrative support, and any other technical, supervisory, or operations personnel.

Benefits of the 12-Step MVT® Process

- Provides a logical, step-by-step methodology for using DOE in your business
- Uses creative input from individuals within your business to generate ideas for testing
- Provides a methodology that enables substantial improvement without increased capital expenditure
- Enables DOE to be used as a continuous improvement tool
- Streamlines the execution of experiments to enable significant performance improvement in a short time period

Course Topics

- Status of quality improvement in various processes
- Basic principles of continuous quality improvement and how they relate to process improvement
- How to identify and prioritize systems
- How to monitor and control key product characteristics
- Introduction to QualPro's 12-Step MVT® Process
- How to identify major causes of product defects
- How to identify and prioritize areas and systems in need of improvement
- Actual examples and exercises from each attendee's industry processes

Essential Statistical Quality Improvement Techniques for the Chemical Industry

Developed especially for the chemical industry, this four-day seminar teaches the basic techniques of statistical quality control and provides training in QualPro's continuous improvement philosophy. Applications and examples are based on situations and processes found in the chemical industry. Theory and technical details are minimal. The course emphasizes the use of simple techniques to produce demonstrable results.

Attendees should include managers; process engineers; statisticians; quality control or quality assurance personnel; and any other technical, supervisory, or operations personnel in the chemical industry.

Topics Covered by this Seminar

- Status of quality improvement in the chemical industry
- How to apply quality improvement techniques to continuous and batch processes in the chemical industry
- How to monitor and control key product characteristics
- How to identify and prioritize systems that need improvement
- Techniques to recognize excessive sampling
- Methods for continuous improvement in customized batch processes
- Introduction to QualPro's 12-Step MVT® Process
- Actual examples and exercises from the chemical industry

Benefits of the 12-Step MVT® Process

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Essential Statistical Quality Improvement Techniques for the Healthcare Industry

The healthcare industry is undergoing drastic changes. Increasing competition from new and different types of healthcare providers, changing consumer expectations, a shortage of trained technical and professional personnel, and more stringent government and insurance requirements are just some of the healthcare industry's many challenges.

This four-day seminar teaches the fundamentals of quality improvement as it applies to hospital, clinical, and other specific provider systems.

Participants should include administrators, managers, supervisors, and other personnel involved in patient care, clinical procedures, and administrative functions in the healthcare industry.

Topics Covered by this Seminar

- Status of quality improvement in the healthcare industry
- Understanding healthcare as a process
- Applications to laboratory and other healthcare measurement systems
- Methods to monitor and improve processes such as admissions, housekeeping, and medicine administration
- How to reduce critical measures such as emergency room waiting time and surgery starting time
- How to identify and prioritize areas and systems in need of improvement
- Introduction to QualPro's 12-Step MVT® Process
- Actual examples and exercises from the healthcare industry

Benefits of the 12-Step MVT® Process

- Provides a logical, step-by-step methodology for using DOE in your business
- Uses creative input from individuals within your business to generate ideas for testing
- Provides a methodology that enables substantial improvement without increased capital expenditure
- Enables DOE to be used as a continuous improvement tool
- Streamlines the execution of experiments to enable significant performance improvement in a short time period

Essential Statistical Quality Improvement Techniques for Marketing & Sales Processes

This four-day seminar presents a step-by-step approach for applying the quality improvement process to the marketing, sales, and customer service departments of any organization. This seminar emphasizes how to identify the main processes or systems in these areas and how to improve the systems relative to customer needs.

Participants should include upper and middle managers in marketing, sales, and customer service.

Topics Covered by this Seminar

- The importance of understanding the interaction between departments
- How the concept of "win-win" involves everyone from supplier to final customer in the quality improvement process
- The consequences of variability in marketing and sales processes, and who is responsible for reducing this variability
- QualPro's 12-Step MVT ® Process
- Techniques used for initial data analysis
- Simple tools to define marketing and sales processes
- Statistical techniques to predict quality performance and costs
- Introduction to experimental design techniques to improve product design, packaging, and promotion
- Introduction to statistical survey sampling
    - Identify customer likes and dislikes about competitive products
    - Accurately estimate market share, inventory levels, etc.
- Common questions that customers ask about quality improvement
- How to implement a quality improvement process in sales, marketing, and customer service
- Introduction to Quality Function Deployment (QFD) to take customer needs and move them systematically through all phases of design, production, and distribution to ensure the product's success

Benefits of the 12-Step MVT® Process

- Provides a logical, step-by-step methodology for using DOE in your business
- Uses creative input from individuals within your business to generate ideas for testing
- Provides a methodology that enables a substantial improvement without increased capital expenditure
- Enables DOE to be used as a continuous improvement tool
- Streamlines the execution of
- experiments to enable significant performance improvement in a short time period

Essential Statistical Quality Improvement Techniques for the Manufacturing Industry

Developed especially for the manufacturing industry, this four-day seminar teaches the basic techniques of statistical quality control and provides training in QualPro's continuous improvement philosophy. Applications and examples are based on situations and processes found in the manufacturing industry. Theory and technical details are minimal. The course emphasizes the use of simple techniques to produce demonstrable results.

Attendees should include managers; process engineers; statisticians; quality control or quality assurance personnel; and any other technical, supervisory, or operations personnel in the manufacturing industry.

Topics Covered by this Seminar

- Status of quality improvement in the manufacturing industry
- How to identify major causes of defects
- How to monitor and control key product characteristics
- How to sample multi-position processes
- Special techniques for monitoring and controlling batch processes
- Measurement assessment for destructive tests and visual tests
- Charting aesthetic and subjective measurements
- Introduction to QualPro's 12-Step MVT® Process
- Actual examples and exercises from the manufacturing industry

Benefits of the 12-Step MVT® Process

- Provides a logical, step-by-step methodology for using DOE in your business
- Uses creative input from individuals within your business to generate ideas for testing
- Provides a methodology that enables substantial improvement without increased capital expenditure
- Enables DOE to be used as a continuous improvement tool
- Streamlines the execution of experiments to enable significant performance improvement in a short time period

Essential Statistical Quality Improvement Techniques for the Paper Industry

Developed specifically for the pulp and paper industry, this four-day seminar teaches the basic techniques of statistical quality control and provides training in QualPro's continuous improvement philosophy. Applications and examples are based on situations and processes common to the pulp and paper industry. Theory and technical details are minimal. The course emphasizes the use of simple techniques to produce demonstrable results.

Participants should include managers, superintendents, supervisors, foremen, process engineers, and quality control and technical personnel in the pulp and paper industry.

Topics Covered by this Seminar

- Status of quality improvement in the paper industry
- How to monitor and control continuous processes such as bleaching and causticizing and batch processes such as starch preparation
- How to identify major causes of product defects
- How to identify and prioritize systems that need improvement
- How to improve paper processes from the wood yard, through the digesters and the paper machines, and to the converter
- Techniques to recognize excessive sampling
- Introduction to QualPro's 12-Step MVT® Process
- Charting techniques for short run production processes
- Actual examples and exercises from the paper industry

Benefits of the 12-Step MVT® Process

- Provides a logical, step-by-step methodology for using DOE in your business
- Uses creative input from individuals within your business to generate ideas for testing
- Provides a methodology that enables substantial improvement without increased capital expenditure
- Enables DOE to be used as a continuous improvement tool
- Streamlines the execution of experiments to enable significant performance improvement in a short time period

Essential Statistical Quality Improvement Techniques for Service & Administrative Processes

A widespread, erroneous belief persists that the science of statistical quality control applies only to manufacturing systems where physical measurements can be taken of process outputs. SQC, however, can be applied to service processes to reduce costs, reduce mistakes, and increase customer satisfaction.

This four-day seminar teaches the basic techniques of problem solving and statistical quality control. It also provides training in QualPro's continuous improvement philosophy. The course material is applicable to service companies and to service and administrative functions in any type of business. This seminar emphasizes how to identify processes in need of improvement and how to choose and employ the proper techniques to improve these processes over time.

Participants should include upper and middle managers in services processes. Others who would benefit include those in service functions such as finance, accounting, personnel, training, data processing, and administrative support.

Topics Covered by this Seminar

- Status of quality improvement in the service industries
- How to view service as a system
- How to identify and prioritize systems that need improvement
- How to monitor and control key measures such as computer downtime, time to invoice, and costs
- How to identify major causes of problems such as billing errors
- Introduction to QualPro's 12-Step MVT® Process
- Actual examples and exercises from a wide variety of service functions

Benefits of the 12-Step MVT® Process

- Provides a logical, step-by-step methodology for using DOE in your business
- Uses creative input from individuals within your business to generate ideas for testing
- Provides a methodology that enables substantial improvement without increased capital expenditure
- Enables DOE to be used as a continuous improvement tool
- Streamlines the execution of experiments to enable significant performance improvement in a short time period

Essential Statistical Quality Improvement Techniques for the Telecommunications Industry

The telecommunications industry combines high technology systems with a wide range of services and transactions accessed by people from almost every walk of life. This four-day seminar addresses telecommunications from the user's perspective and extends to the internal systems, which ultimately supply the consumer.

This seminar focuses on testing practical, fast, and cost-free solutions to allow telecommunications industries to rapidly improve customer retention, churn, and acquisition while reducing repair times, outages, and operating costs.

Participants should include administrators, managers, supervisors, and other personnel involved in telecommunications.

Benefits of the 12-Step MVT® Process

- Provides a logical, step-by-step methodology for using DOE in your business
- Uses creative input from individuals within your business to generate ideas for testing
- Provides a methodology that enables substantial improvement without increased capital expenditure
- Enables DOE to be used as a continuous improvement tool
- Streamlines the execution of experiments to enable significant performance improvement in a short time period

Course Topics

- Status of quality improvement in the telecommunications industry
- How to view telecommunications as a system
- How to identify major causes of problems, such as service outages
- How to monitor and control computer downtime
- Reduction of response time to customer requests for service
- Techniques to improve customer wait time, such as operator response time and hold time
- QualPro's 12-Step MVT® Process
- Actual examples and exercises from the telecommunications industry

Essential Statistical Quality Improvement Techniques for the Textile Industry

Developed specifically for the textile industry, this four-day seminar teaches the basic techniques of statistical quality control and provides training in QualPro's continuous improvement philosophy. Applications and examples are based on situations and processes common to the textile industry. Theory and technical details are minimal. The course emphasizes the use of simple techniques to produce demonstrable results.

Participants should include managers, superintendents, supervisors, foremen, process engineers, and quality control and technical personnel in the textile industry.

Topics Covered by this Seminar

- Status of quality improvement in the textile industry
- How to monitor and control key product characteristics
- How to identify major causes of product defects
- How to sample multi-position processes
- Special techniques for monitoring and controlling batch processes
- Measurement assessment for destructive tests and visual tests
- Charting aesthetic and subjective measurements
- Introduction to QualPro's 12-Step MVT® Process
- Using the Control Chart for Process Improvement
- Actual examples and exercises from the textile industry

Benefits of the 12-Step MVT® Process

- Provides a logical, step-by-step methodology for using DOE in your business
- Uses creative input from individuals within your business to generate ideas for testing
- Provides a methodology that enables substantial improvement without increased capital expenditure
- Enables DOE to be used as a continuous improvement tool
- Streamlines the execution of experiments to enable significant performance improvement in a short time period

Statistical Methods for Improving Measurement Systems

All statistical methods for design, improvement, and control of processes rely on a measurement system. Without a controlled and capable measurement system, one cannot "see" the process. This four-day seminar presents practical methods for evaluating, controlling, and improving measurement systems.

Participants should include laboratory managers, supervisors, analysts, test engineers or technicians, and engineering or production personnel involved in taking measurements and designing measurement systems.

Topics Covered by this Seminar

- The need for measurement control and improvement
- How to define measurement procedures in terms of a system
- QualPro's 12-Step MVT® Process
- Measurement capability studies
- Accuracy and precision assessment and detection of bias
- Measurement capability indexes
- Comparison of two measurements, methods, machines, etc.
- Problems of physical sampling
- Use of standards
- Components of precision
  - Repeatability and reproducibility studies of gage variation and operation contribution
  - Assessment of sampling variation
  - Calibration techniques
- Interlaboratory comparisons
  - Problems with round robins
  - Recommended procedures for analysis of interlaboratory test results
- Basic experimental design techniques to improve precision

Benefits of the 12-Step MVT® Process

- Provides a logical, step-by-step methodology for using DOE in your business
- Uses creative input from individuals within your business to generate ideas for testing
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Statistical Methods for Improving Maintenance Performance

This four-day seminar teaches maintenance personnel to better utilize maintenance and operations data, including data collected with modern Computerized Maintenance Management Systems (CMMS). Methods for assessing key performance measures and measurement systems are presented along with other diagnostic statistical tools. You will learn techniques to determine failure patterns and calculate failure rates, along with procedures to determine planning and timing for preventive and predictive maintenance activities. You will also be introduced to experimental design concepts and their applications in maintenance. This seminar is specifically designed to help maintenance managers, engineers, technicians, and other professionals better utilize data, CMMS, and other technology. Together these tools reduce costs and downtime, improve efficiency, and improve overall maintenance performance.

In This Seminar You Will Learn:

- How to view maintenance as a system.
- How to statistically monitor key performance measures and process characteristics.
- How to assess and improve measurement systems, process stability, and process capability.
- How to calculate failure rates and mean time to repair.
- How to determine failure patterns and utilize that information in preventive maintenance planning.
- How to apply experimental design methods to maintenance processes.

Course Outline

Introduction

- The Role of Statistics in Maintenance
- Reducing Total Costs

Targeting Business Results

- Maintenance System Design
- Variation and Its Effects on Maintenance

Measuring and Assessing Performance

- Key Performance Measures
- Statistical Tools for Maintenance
- Assessing System Capability
- Validating Measurement Systems

Monitoring and Controlling Maintenance Systems

- Control Charts for Variables Data
- Control Charts for Attribute Data

Continuous Improvement of Results

- Preventive Maintenance Planning
  – Estimating Failure Rates
  – Estimating MTBF
  – Evaluating Failure Patterns
  – Estimating Time for Replacement
- Reliability
  – Calculating Reliability and Availability
  – Calculating Reliability of a System
  – Use of Redundancy

Achieving Breakthrough Improvement

- Introduction to the MVT® Process

Maintenance Applications for the 12-Step MVT Process

- Reduce Downtime
- Increase Time between Failures
- Increase Throughput
- Reduce Unscheduled Downtime
- Reduce Equipment Cleanout time
- Improve Product Performance
- Decrease Pump Failures

The QualPro MVT® Process for Improving Performance and Profit Margins

Of all the statistical techniques QualPro teaches, design of experiments is the most powerful. Experimental design techniques enable managers to dramatically enhance their quality improvement efforts. While traditional scientific methods change only one factor at a time, QualPro's simple and practical methods are both low cost and quickly implemented without compromising the power or validity of the underlying statistical techniques. QualPro's 12-Step MVT® Process puts experimental design techniques where they will be most powerful—in the hands of many people in the organization rather than a select few statisticians. This four-day seminar teaches the fundamental concepts of experimental design. Realistic examples and actual case studies from various industries are used to enhance the understanding of key points. Our seminar content is presented as a simple, step-by-step approach to experimental design with minimal technical detail and emphasizes the use of statistical techniques—and statistical software—to uncover opportunities for breakthrough improvement.

You will leave this seminar with an experiment designed to improve a specific process in your organization. You will identify the problem you wish to improve, we will help you design the experiment, and you will return to work ready to execute it.

Participants should include managers, engineers, technicians, production supervisors, statisticians, operations personnel, and quality control and laboratory analysts.

Course Outline

Introduction
- History of experimental design
- QualPro's 12-Step MVT® Process
- Definition of "improving quality"
- Testing for stability
- Evaluating process capability

Fundamental Concepts
- The fallacy of "holding conditions constant" (testing one factor at a time)
- Advantages of factorials
- Language of experimental design
- Principles of experimentation

Factorial Designs
- 2^n factorial experiments
- QualPro analysis procedure
  - Main factor effects
  - Interaction effects
  - Effects on consistency
- Checking for low variance conditions
- Randomization
- Assessing curvature
- Blocking
- Obstacles to the use of experimental design

Practical Management of Experimental Design
- Brainstorming factors
- Categorizing factors as practical, fast, and cost free
- Screening experimentation
- Refining experimentation
- Group exercise in applying the designs in the development of a process

Screening Designs
- QualPro's screening designs
- Reflection
- Dummy variables

Evolutionary Operation (EVOP)
- EVOP design and analysis
- EVOP benefits

Preview of Advanced Experimental Design
- Response surface methodology
- Multi-level designs
- Mixture designs

The QualPro MVT® Process for Improving Performance and Profit Margins in the Chemical Industry

This advanced experimental design seminar is presented as a simple, step-by-step approach to design of experiments (DOE) with minimal technical detail. The seminar emphasizes the use of statistical techniques—and statistical software—to uncover opportunities for breakthrough improvement. The realistic examples and case studies included in the seminar have been collected from years of successful application of DOE to actual chemical processes. During the seminar, participants learn how to utilize DOE to overcome challenges commonly faced in the chemical industry.

Participants leave this seminar with an experiment designed to improve a specific process in their organization. Participants identify the problem or the key performance indicator they wish to improve. We help them design the experiment, and they return to work ready to execute it.

Course Outline

Day 1

- Introduction to QualPro's DOE Approach: The 12-Step MVT® Process
- Review of Basic Statistical Techniques
- Validating Measurement Systems
- Using Statistical Tools to Prepare for Experimentation

Day 2

- Identifying Factors (Ideas Included in an Experiment) and Levels (Factor Settings) to Test
- Experimental Strategy and Design
- Introduction to QualPro's Custom Screening Designs
- Fundamentals for Designing and Executing Experiments

Day 3

- Introduction to Factorial Designs
- Fundamentals of Analyzing Experiments
- Analyzing Experiments Using Software

Day 4

- Deploying and Analyzing Screening Experiments
- The Role and Execution of Refining Experiments
- Workshops to Evaluate, Critique, and Approve the Designs of Individual Experiments
- Practical Advice for Using DOE and QualPro's DOE Software Within Your Business

In This Seminar, Participants Learn:

- How to View Production and Operations as a System
- How to Use Statistical Tools to Monitor Key Success Measures and Process Characteristics
- How to Assess Measurement Systems, Process Stability, and Process Capability
- How to Identify Ideas to Test
- How to Apply DOE to Their Most Vital Processes
- How to Plan and Successfully Deploy Screening and Refining Experiments in Order To:
  - ► Identify the Ideas That Will Improve Performance
  - ► Avoid the Ideas That Will Hurt Performance
  - ► Optimally Manage the Ideas That Have No Effect on Performance

Chemical Industry Applications for the 12-Step MVT Process

- Increase Throughput (Yield)
- Improve Purity
- Reduce Cycle Time
- Increase Dollar Sales
- Decrease Emissions
- Reduce Measurement Variation

The QualPro MVT® Process for Improving Performance and Profit Margins in the Healthcare Industry

This advanced experimental design seminar is presented as a simple, step-by-step approach to design of experiments (DOE) with minimal technical detail. The seminar emphasizes the use of statistical techniques—and statistical software—to uncover opportunities for breakthrough improvement. The realistic examples and case studies included in the seminar have been collected from years of successful application of DOE to actual healthcare processes. During the seminar, participants learn how to utilize DOE to overcome challenges commonly faced in the healthcare industry.

Participants leave this seminar with an experiment designed to improve a specific process in their organization. Participants identify the problem or the key performance indicator they wish to improve. We help them design the experiment, and they return to work ready to execute it.

Course Outline

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Day 3

- Introduction to Factorial Designs
- Fundamentals of Analyzing Experiments
- Analyzing Experiments Using Software

Day 4

- Deploying and Analyzing Screening Experiments
- The Role and Execution of Refining Experiments
- Workshops to Evaluate, Critique, and Approve the Designs of Individual Experiments
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Healthcare Industry Applications for the 12-Step MVT Process

- Increase Sales
- Increase ER Throughput
- Increase Patient Satisfaction
- Increase Physician Satisfaction
- Improve Hand Hygiene Compliance
- Reduce No Show Rate

The QualPro MVT® Process for Improving Marketing and Sales Processes

This advanced experimental design seminar is presented as a simple, step-by-step approach to design of experiments (DOE) with minimal technical detail. The seminar emphasizes the use of statistical techniques—and statistical software—to uncover opportunities for breakthrough improvement. The realistic examples and case studies included in the seminar have been collected from years of successful application of DOE to actual marketing and sales processes. During the seminar, participants learn how to utilize DOE to overcome challenges commonly faced in marketing and sales processes.

Participants leave this seminar with an experiment designed to improve a specific process in their organization. Participants identify the problem or the key performance indicator they wish to improve. We help them design the experiment, and they return to work ready to execute it.

Course Outline

Day 1

- Introduction to QualPro's DOE Approach: The 12-Step MVT® Process
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- Introduction to QualPro's Custom Screening Designs
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- Fundamentals of Analyzing Experiments
- Analyzing Experiments Using Software

Day 4

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Marketing and Sales Applications for the 12-Step MVT Process

- Increase Sales
- Improve Market Share
- Increase Margins
- Improve Customer Satisfaction
- Improve Advertising Effectiveness
- Increase Return on Ad Spend (ROAS)
- Boost Conversion Rate (CVR) optimization
- Improve Cost to Acquire (CPA)
- Improve Click-Through Rate (CTR)

The QualPro MVT® Process for Improving Performance and Profit Margins in the Manufacturing Industry

This advanced experimental design seminar is presented as a simple, step-by-step approach to design of experiments (DOE) with minimal technical detail. The seminar emphasizes the use of statistical techniques—and statistical software—to uncover opportunities for breakthrough improvement. The realistic examples and case studies included in the seminar have been collected from years of successful application of DOE to actual manufacturing processes. During the seminar, participants learn how to utilize DOE to overcome challenges commonly faced in manufacturing processes.

Participants leave this seminar with an experiment designed to improve a specific process in their organization. Participants identify the problem or the key performance indicator they wish to improve. We help them design the experiment, and they return to work ready to execute it.

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Day 2

- Identifying Factors (Ideas Included in an Experiment) and Levels (Factor Settings) to Test
- Experimental Strategy and Design
- Introduction to QualPro's Custom Screening Designs
- Fundamentals for Designing and Executing Experiments

Day 3

- Introduction to Factorial Designs
- Fundamentals of Analyzing Experiments
- Analyzing Experiments Using Software

Day 4

- Deploying and Analyzing Screening Experiments
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- How to Assess Measurement Systems, Process Stability, and Process Capability
- How to Identify Ideas to Test
- How to Apply DOE to Their Most Vital Processes
- How to Plan and Successfully Deploy Screening and Refining Experiments in Order To:
  - ► Identify the Ideas That Will Improve Performance
  - ► Avoid the Ideas That Will Hurt Performance
  - ► Optimally Manage the Ideas That Have No Effect on Performance

Manufacturing Applications for the 12-Step MVT Process

- Increase Throughput
- Improve Quality
- Increase Sales
- Reduce Measurement Variation
- Reduce Waste
- Reduce Emissions

The QualPro MVT® Process for Improving Performance and Profit Margins in the Paper Industry

This advanced experimental design seminar is presented as a simple, step-by-step approach to design of experiments (DOE) with minimal technical detail. The seminar emphasizes the use of statistical techniques—and statistical software—to uncover opportunities for breakthrough improvement. The realistic examples and case studies included in the seminar have been collected from years of successful application of DOE to actual paper industry processes. During the seminar, participants learn how to utilize DOE to overcome challenges commonly faced in paper industry processes.

Participants leave this seminar with an experiment designed to improve a specific process in their organization. Participants identify the problem or the key performance indicator they wish to improve. We help them design the experiment, and they return to work ready to execute it.

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- Introduction to QualPro's DOE Approach: The 12-Step MVT® Process
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- Experimental Strategy and Design
- Introduction to QualPro's Custom Screening Designs
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- Introduction to Factorial Designs
- Fundamentals of Analyzing Experiments
- Analyzing Experiments Using Software

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- How to View Production and Operations as a System
- How to Use Statistical Tools to Monitor Key Success Measures and Process Characteristics
- How to Assess Measurement Systems, Process Stability, and Process Capability
- How to Identify Ideas to Test
- How to Apply DOE to Their Most Vital Processes
- How to Plan and Successfully Deploy Screening and Refining Experiments in Order To:
  - Identify the Ideas That Will Improve Performance
  - Avoid the Ideas That Will Hurt Performance
  - Optimally Manage the Ideas That Have No Effect on Performance

Paper Industry Applications for the 12-Step MVT Process

- Increase Throughput
- Improve Brightness
- Reduce Waste
- Increase Sales
- Reduce Emissions
- Reduce Color Measurement Variation

The QualPro MVT® Process for Improving Performance and Profit Margins in Service and Administrative Processes

This advanced experimental design seminar is presented as a simple, step-by-step approach to design of experiments (DOE) with minimal technical detail. The seminar emphasizes the use of statistical techniques—and statistical software—to uncover opportunities for breakthrough improvement. The realistic examples and case studies included in the seminar have been collected from years of successful application of DOE to actual service industry processes. During the seminar, participants learn how to utilize DOE to overcome challenges commonly faced in the service industry.

Participants leave this seminar with an experiment designed to improve a specific process in their organization. Participants identify the problem or the key performance indicator they wish to improve. We help them design the experiment, and they return to work ready to execute it.

Course Outline

Day 1

- Introduction to QualPro's DOE Approach: The 12-Step MVT® Process
- Review of Basic Statistical Techniques
- Validating Measurement Systems
- Using Statistical Tools to Prepare for Experimentation

Day 2

- Identifying Factors (Ideas Included in an Experiment) and Levels (Factor Settings) to Test
- Experimental Strategy and Design
- Introduction to QualPro's Custom Screening Designs
- Fundamentals for Designing and Executing Experiments

Day 3

- Introduction to Factorial Designs
- Fundamentals of Analyzing Experiments
- Analyzing Experiments Using Software

Day 4

- Deploying and Analyzing Screening Experiments
- The Role and Execution of Refining Experiments
- Workshops to Evaluate, Critique, and Approve the Designs of Individual Experiments
- Practical Advice for Using DOE and QualPro's DOE Software Within Your Business

In This Seminar, Participants Learn:

- How to View Production and Operations as a System
- How to Use Statistical Tools to Monitor Key Success Measures and Process Characteristics
- How to Assess Measurement Systems, Process Stability, and Process Capability
- How to Identify Ideas to Test
- How to Apply DOE to Their Most Vital Processes
- How to Plan and Successfully Deploy Screening and Refining Experiments in Order To:
  - ► Identify the Ideas That Will Improve Performance
  - ► Avoid the Ideas That Will Hurt Performance
  - ► Optimally Manage the Ideas That Have No Effect on Performance

Service and Administrative Applications for the 12-Step MVT Process

- Reduce Billing Errors
- Minimize Past-Due Invoices
- Improve Customer Satisfaction
- Reduce Complaints
- Reduce Order Errors
- Improve Internet Ratings and Reviews
- Increase Customer Throughput
- Decrease Customer Wait Times

The QualPro MVT® Process for Improving Performance and Profit Margins in the Telecommunications Industry

This advanced experimental design seminar is presented as a simple, step-by-step approach to design of experiments (DOE) with minimal technical detail. The seminar emphasizes the use of statistical techniques—and statistical software—to uncover opportunities for breakthrough improvement. The realistic examples and case studies included in the seminar have been collected from years of successful application of DOE to actual telecommunications processes. During the seminar, participants learn how to utilize DOE to overcome challenges commonly faced in telecommunications processes.

Participants leave this seminar with an experiment designed to improve a specific process in their organization. Participants identify the problem or the key performance indicator they wish to improve. We help them design the experiment, and they return to work ready to execute it.

Course Outline

Day 1

- Introduction to QualPro's DOE Approach: The 12-Step MVT® Process
- Review of Basic Statistical Techniques
- Validating Measurement Systems
- Using Statistical Tools to Prepare for Experimentation

Day 2

- Identifying Factors (Ideas Included in an Experiment) and Levels (Factor Settings) to Test
- Experimental Strategy and Design
- Introduction to QualPro's Custom Screening Designs
- Fundamentals for Designing and Executing Experiments

Day 3

- Introduction to Factorial Designs
- Fundamentals of Analyzing Experiments
- Analyzing Experiments Using Software

Day 4

- Deploying and Analyzing Screening Experiments
- The Role and Execution of Refining Experiments
- Workshops to Evaluate, Critique, and Approve the Designs of Individual Experiments
- Practical Advice for Using DOE and QualPro's DOE Software Within Your Business

In This Seminar, Participants Learn:

- How to View Production and Operations as a System
- How to Use Statistical Tools to Monitor Key Success Measures and Process Characteristics
- How to Assess Measurement Systems, Process Stability, and Process Capability
- How to Identify Ideas to Test
- How to Apply DOE to Their Most Vital Processes
- How to Plan and Successfully Deploy Screening and Refining Experiments in Order To:
  - ► Identify the Ideas That Will Improve Performance
  - ► Avoid the Ideas That Will Hurt Performance
  - ► Optimally Manage the Ideas That Have No Effect on Performance

Telecommunications Applications for the 12-Step MVT Process

- Improve Sales
- Increase Productivity for Installation and Maintenance
- Increase Customer Satisfaction
- Improve Order Response Time
- Increase Margin per Customer
- Decrease Installation Time

The QualPro MVT® Process for Improving Performance and Profit Margins in the Textile Industry

This advanced experimental design seminar is presented as a simple, step-by-step approach to design of experiments (DOE) with minimal technical detail. The seminar emphasizes the use of statistical techniques—and statistical software—to uncover opportunities for breakthrough improvement. The realistic examples and case studies included in the seminar have been collected from years of successful application of DOE to actual textile processes. During the seminar, participants learn how to utilize DOE to overcome challenges commonly faced in textile processes.

Participants leave this seminar with an experiment designed to improve a specific process in their organization. Participants identify the problem or the key performance indicator they wish to improve. We help them design the experiment, and they return to work ready to execute it.

Course Outline

Day 1

- Introduction to QualPro's DOE Approach: The 12-Step MVT® Process
- Review of Basic Statistical Techniques
- Validating Measurement Systems
- Using Statistical Tools to Prepare for Experimentation

Day 2

- Identifying Factors (Ideas Included in an Experiment) and Levels (Factor Settings) to Test
- Experimental Strategy and Design
- Introduction to QualPro's Custom Screening Designs
- Fundamentals for Designing and Executing Experiments

Day 3

- Introduction to Factorial Designs
- Fundamentals of Analyzing Experiments
- Analyzing Experiments Using Software

Day 4

- Deploying and Analyzing Screening Experiments
- The Role and Execution of Refining Experiments
- Workshops to Evaluate, Critique, and Approve the Designs of Individual Experiments
- Practical Advice for Using DOE and QualPro's DOE Software Within Your Business

In This Seminar, Participants Learn:

- How to View Production and Operations as a System
- How to Use Statistical Tools to Monitor Key Success Measures and Process Characteristics
- How to Assess Measurement Systems, Process Stability, and Process Capability
- How to Identify Ideas to Test
- How to Apply DOE to Their Most Vital Processes
- How to Plan and Successfully Deploy Screening and Refining Experiments in Order To:
  - ► Identify the Ideas That Will Improve Performance
  - ► Avoid the Ideas That Will Hurt Performance
  - ► Optimally Manage the Ideas That Have No Effect on Performance

Textile Industry Applications for the 12-Step MVT Process

- Reduce Yarn Breaks
- Improve Color Consistency
- Increase Throughput
- Reduce Streaks
- Reduce Customer Rejects
- Improve Quality

Advanced Design of Experiments Techniques for Lean Six Sigma Professionals

Developed specifically for those with previous LSS education, this four-day seminar provides attendees with a review of statistical process control (SPC) techniques and an introduction to QualPro's approach to experimental design – the 12-Step MVT® Process.

Our seminar content is presented as a simple, step-by-step approach to DOE with minimal technical detail and emphasizes the use of statistical techniques — and statistical software — to uncover opportunities for breakthrough improvement. The exercises included in the seminar have been collected from years of successful application in numerous industries. Through this seminar, you will learn how to use DOE to solve real-world business problems. Upon successful completion, you will receive DOE specialist certification.

You will leave this seminar with an experiment designed to improve a specific process in your organization. You will identify the process or the KPI you wish to improve, we will help you design the experiment, and you will return to work ready to execute it.

Topics Covered by this Seminar

- How to view production and operations as a system
- How to use LSS tools to monitor key success measures and process characteristics
- How to assess measurement systems, process stability, and process capability
- How to use LSS tools to identify ideas to test
- How to apply DOE to your most vital processes
- How to plan and successfully deploy screening and refining experiments in order to:
  - Identify the ideas that will improve performance
  - Avoid the ideas that will hurt performance
  - Optimally manage the ideas that have no effect on performance
- How to analyze and interpret the results of a designed experiment using QualPro's DOE software
- Introduction to QualPro's DOE approach – the 12-Step MVT® Process
- Understanding the role of lean in experimental design
- Validating measurement systems
- Review of Six Sigma statistical process control techniques
- Using LSS tools to prepare for experimentation
- Identifying factors (ideas included in an experiment) and levels (factor settings) to test
- Experimental strategy and design
- Introduction to QualPro's custom screening designs
- Fundamentals for designing and executing experiments
- Introduction to factorial designs
- Fundamentals of analyzing experiments
- Analyzing experiments using QualPro's DOE software
- Deploying and analyzing screening experiments
- The role and execution of refining experiments
- Practical advice for using DOE within your business
- Workshops to evaluate, critique, and approve the designs of individual experiments

Development of a Company-Wide Quality Improvement Process

Successful company-wide implementation of continuous quality improvement requires the involvement and commitment of top management. Senior executives fulfill their responsibility for quality through a series of new actions and tasks. In addition, they must give support to the workforce during the improvement process. This four-day, executive-level seminar serves as a springboard for the quality improvement effort. Major emphasis is placed on the process of change and the initial development of the company-wide action plan.

Participants should include the CEO, president, and their direct reports.

Course Topics

- The managerial and technical aspects of continuous quality improvement
- How to initiate and sustain the improvement process
- The potential for the use of statistical methods and how to lead and manage their use company-wide
- A straightforward method for developing a company-wide plan that will bring about dramatic and continuous improvement

Course Outline

Introduction

- The need for change
- Some recent trends
- Sources of improvement

Variation

- The systems model for managing quality
- The fallacy of managing by specification
- Variation: the enemy of quality
- Managing variation
- Controlled vs. uncontrolled variation
- Responsibility assignments
- Specification limits vs. control limits
- Advantage of statistical control
- The evils of overcontrol
- Continuous improvement

Statistical Tools and Process Improvement Strategy

- Practical statistics
- QualPro's 12-Step MVT® Process
- Hierarchy of statistical methods
- Basic methods for analyzing and displaying data
- Basic tools for problem solving
- Control charts
- Process capability
- Process improvement
- Introduction to advanced methods
    - Measurement system improvement
    - Experimental design for improving process
    - Surveys
    - Quality Function Deployment

Managing Improvement

- Planning, monitoring, and controlling improvement
- Leadership for change: new requirements for managers

Developing the Company-Wide Plan

- The QualPro Process for organization-wide improvement
- Team structure and project selection
- Development of the company-wide plan using the QualPro Process Planning Matrix
- Getting started: action plans, priorities, and assignments

Multivariable Testing Techniques for Designing and Developing a New Manufacturing Process

One way to make quantum leaps in quality improvement is to do a better job designing and developing production processes. Companies cannot afford new production processes or plants that generate excessive waste during their infancy. New processes must also have the flexibility to keep up with rapidly changing design requirements. This four-day seminar will teach how to design the process correctly the first time, how to understand new processes, how to design new processes efficiently, and how to alter new processes to meet changing design requirements. Participants will also learn how to identify key process variables during the R&D or process development stage. Additionally, participants will learn how to determine the potential effects of – and the relations among – these variables.

Participants should include research and development personnel, supervisors and engineers, and others involved in designing and developing processes.

Course Outline

Introduction

- History of experimental design
- QualPro's 12-Step MVT® Process
- QualPro's 14-Step Procedure for Designing and Developing a Future Production Process
- Definition of "improving quality"
- Testing for stability
- Evaluating process capability

Fundamental Concepts

- A "hands-on" exercise in the benefits of experimental design
- The fallacy of "holding conditions constant" (testing one factor at a time)
- Advantages of factorials
- Language of experimental design
- Principles of experimentation

Factorial Designs

- 2^n factorial experiments
- QualPro analysis procedure
  - Main factor effects
  - Interaction effects
  - Effects on consistency
- Checking for low variance conditions
- Randomization
- Assessing curvature
- Blocking
- Obstacles to the use of experimental design

Practical Management of Experimental Design

- Brainstorming factors
- Categorizing factors as practical, fast, and cost free
- Screening experimentation
- Refining experimentation
- Group exercise in applying the designs in the development of a process

Screening Designs

- QualPro screening designs
- Reflection
- Dummy variables

Regression Analysis for Process Improvement

Over the course of four days, QualPro's expert consultants teach attendees both basic and advanced regression analysis, in addition to other data analysis techniques. Using industry-specific examples and class exercises derived from real-world business data, QualPro's consultants tailor course content to the specific needs of seminar participants. With QualPro's assistance, attendees learn how to turn their data into profits.

Course Outline

Introduction

- Why Regression?
- Regression in QualPro's Twelve-Step Procedure for Improving a Process
- Regression Overview
- Basic Techniques that Apply to Regression

Simple Linear Regression

- Scatter Plots
- Correlation
- Fitting a Line by Least Squares
- Evaluating the Least Squares Fit
- Evaluating the Slope of the Least Squares Line
- "Control Limits" for the Slope and Intercept
- Prediction in Simple Linear Regression

Multiple Linear Regression

- Overview of Multiple Linear Regression
- Choosing the Best Model
- Collinearity
- Verifying Assumptions
- Validation of the Model

Additional Multiple Regression Techniques

- Qualitative Variables in Regression
- Curvature
- Interactions

Attendees leave this seminar with:

- Insights derived from expert-guided analysis of their data.
- A strong understanding of regression analysis and other data analysis methods.
- The statistical knowledge and software training necessary to independently conduct data analysis projects within their organization.
- An action plan to take back to their company that will enable them to leverage their data going forward

Expert-Level Design of Experiments Techniques: Special Topics

Participants must have previously attended a QualPro MVT® seminar or a QualPro Advanced DOE seminar.

Course Outline

Introduction and Review
- Basic experimentation
- Advanced experimentation
- Estimating sigma

Testing One or More Factors at Two Levels
- *t* test
- SUM_+ and SUM_- analysis

Testing Factors at More Than Two Levels
- One-way analysis of variance (ANOVA)
- Testing multiple factors with ANOVA
- Randomized complete block design

Fractional Factorial Designs
- Basic structure of factorial designs
- Confounding schemes for fractional factorial designs

QualPro Screening Designs
- Basic properties of QualPro's experimental designs
- Confounding schemes for geometric experimental designs
- Interpreting statistically significant dummy factors
- Confounding schemes for non-geometric QualPro experimental designs
- Reflection
- General conclusions

Nuisance Factors
- General strategy
- Holding nuisance factors constant
- Blocking
- Combining blocking factors
- Randomization

Special Topics
- Experimenting with four levels in a two-level design
- Analysis of attribute response
- Determination of sample size
- Testing for special causes
- Missing or incomplete data
- Factors affecting variability
- Partial replication
- Using standardized measurements as DOE responses
- Analysis of multiple responses
- Best practices for experimentation

Experimenting with Mixtures
- Introduction to mixture experiments
- When standard designs are appropriate

What to Expect

- Review of basic DOE techniques
- Using software to:
  - Test one or more factors at two levels
  - Test factors at more than two levels with ANOVA
- Design concepts—completely randomized design (CRD), randomized complete block (RCB)
- Fractional factorials of 2^n designs
- Geometric and non-geometric design properties
- Dealing with nuisance factors
- Special topics
- Mixture designs

Advanced Statistical Process Control Techniques

This course provides an in-depth understanding of statistical quality control tools that are useful in QualPro's Eight-Step Procedure for Improving a Process. All topics in this seminar have been included because they may be needed on a fairly regular basis to augment the basic tools presented in the QualPro Essential Statistical Quality Improvement Techniques Seminar. Many of these methods are more powerful than the basic tools, and others are included because they handle nonstandard situations. These will be useful to individuals who understand and have been using statistical quality control methods and have a need for more advanced techniques.

Topics Covered by this Seminar

- Graphical methods for comparing process strata
- Numerical methods for comparing process strata
- Other methods for describing process variation
- Advanced measurement system techniques
- Variables control charts
- Attribute control chart
- Average run length
- Special cause analysis
- Concepts of capability
- Capability for variables measurements
- Capability for attribute data
- Managing multiple sets of specifications
- Stability and MVT experimentation
- Evolutionary Operations
- Advanced Methods for MVT Experimentation

Optimizing Forecasting for Manufacturing

Over the course of four days, QualPro teaches attendees both basic and advanced forecasting techniques, in addition to other data analysis techniques. Using examples derived from real-world business data, QualPro's consultants tailor course content to the specific forecasting needs of manufacturing companies. With QualPro's assistance, attendees learn how to build effective forecasting models that will improve business performance.

Course Outline

Introduction

- Forecasting Applications
- Forecasting in QualPro's Twelve-Step Procedure for Improving a Process
- Forecasting Overview
- Basic Techniques That Apply to Regression and Forecasting

Data Exploration and Preparation

- Time Series Operators
- Identifying Instances of Uncontrolled Variation
- Identifying the Cause of Uncontrolled Variation
- Evaluating the Slope of the Least Squares Line
- "Control Limits" for the Slope and Intercept
- Forecasting with Simple Linear Regression

Forecasting Models

- Time and Entity Fixed Effects Models
- Autoregressive Moving Average (ARMA) Models
- Autoregressive Integrated Moving Average (ARIMA) Models
- Autoregressive Moving Average with Exogenous Inputs (ARMAX) Models
- Exponential Smoothing Models
- Autoregressive Conditional Heteroskedasticity (ARCH) Models
- Vector Autoregression (VAR) Models
- Threshold Regression Models
- Basic Bayesian Threshold Autoregressive Models

Attendees leave this seminar with:

- Insights derived from expert-guided creation of forecasting models.
- A strong understanding of regression analysis, time series analysis, and forecasting techniques.
- The statistical knowledge and software training necessary to independently construct forecasting models for their company.
- An action plan to take back to their company that will enable them to build effective forecasting models.

Call (865) 927-0491 or email seminars@qualproinc.com to learn more.