QUALPRO®

Expert-Level DOE Techniques: Special Topics

865-927-0491

www.qualproinc.com

About Us

Faced with tougher competition and a more demanding customer, businesses recognize the need for process improvement. Many of the methods that can improve processes, however, are overlooked or misunderstood. Perhaps the least understood of these methods is design of experiments (DOE). QualPro's 12-Step MVT® Process is a logical, easy-to-follow improvement methodology that uses DOE to identify the specific changes in a process that enable breakthrough performance improvement.

Over the years, QualPro consultants have taught hundreds of Six Sigma Master Black Belts how to effectively use DOE within the framework of QualPro's 12-Step MVT® Process. In QualPro's Advanced DOE for LSS Professionals seminar, attendees learn how to utilize DOE to enhance their ongoing LSS improvement efforts. QualPro consultants teach attendees how to test numerous improvement ideas — more than a dozen in some scenarios — simultaneously without disrupting operations or increasing capital expenditure.

	A/B Testing	Typical Factorial DOE	Typical Fractional Factorial DOE	QualPro's DOE
Cost	Low	Relatively Low	High	Low
Speed of Testing	Slowest	Slow	Rapid	Rapid
Likelihood of Significant, Measurable Improvement	Extremely Low	Low	Relatively Low	Certain
Likelihood of Breakthrough Improvement	Almost Impossible	Extremely Low	Low	High
Applicable across Numerous Industries	Yes	No	No	Yes
Ability to Estimate All Two-Factor Interactions	No	Yes	No	Yes
Ease of Execution and Analysis	Easy	Relatively Easy	Difficult	Easy
Designed to Foster Teamwork and Encourage Creativity	No	No	No	Yes
Designed for Continuous Improvement	No	No	No	Yes

"QualPro's application of statistics is not an academic and arcane science. It is practical. It is useful, and it's useful because it's simple. It's direct, and it's used in an appropriate way to drive truth into the data."

Sauder Woodworking, Chuck Lawrence, Vice President of Purchasing & Information Services

"QualPro's MVT Process to design, execute, analyze, and implement results uses a cross-functional team approach. Before we started using MVT, implementing team concepts with different management structures was difficult. QualPro's MVT approach quickly brought together cross-functional team members, and it worked seamlessly. QualPro recommended we get shop floor, technical, mechanical, and supervision involved in the same MVT. This really boosted our efforts to use cross-functional teams. I would recommend their process for cross-functional teams in any organizational structure."

DuPont, Jerry Russell, Six Sigma Champion and Lean Master Black Belt

To request more information about the seminar please contact QualPro by phone at 865-927-0491 or by email at seminars@qualproinc.com.

Expert-Level Design of Experiments (DOE) Techniques: Special Topics

This seminar is available to participants who have previously taken a QualPro MVT® seminar or a QualPro Advanced DOE seminar and provides attendees with a concise review of basic and advanced experimental design topics before shifting toward more complex DOE concepts.

This seminar will also cover nuisance factors and mixture designs. With our guidance, participants will also learn how to use simultaneous designs, which can provide a higher level of statistical validity without increasing the time required to execute the experiment. Additionally, participants will learn how to analyze the results of incomplete screening designs.

Attendees will leave this seminar with the tools necessary to manage even the most complex experimental design issues. Upon completing this seminar, attendees will receive QualPro's DOE Expert certification.

Course Topics

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
- Experiment using JMP®
- 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

"I have been through Six Sigma Green Belt and Black Belt training. The QualPro course was a great addition to my previous training."

GAF, Beth Miller, Quality Manager

Contact

For more information on the seminar or QualPro please visit our website or call the number below.

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seminars@qualproinc.com

"The QualPro consultants have an innate ability to communicate, teach and instruct advanced concepts. The seminar is led in such a way that practical applications can easily and readily be understood. The statistical models, training materials and their genuine passion for the subject matter combined with personable and direct instructive techniques left me pleasantly surprised given the subject matter. I recall returning to work with a plethora of ideas that resulted in the application of tangible process improvements."
– Seminar Participant, Quality Engineer

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QUALPRO®
RESULTS ARE EVERYTHING.